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Electric Sheet Steel

QUALITY OF TRANSFORMER LAMINATIONS

THE large number of addresses, papers, lectures and evening discourses delivered and discussed at the annual meeting of the British Association for the Advancement of Science at Newcastle-upon-Tyne, which was concluded last week, were arranged to appeal to fifteen branches of science and engineering. Many of them were of considerable technical interest and some provocative, but none of them perhaps more surprising than the important paper which dealt with magnetic materials for electrical power plant.

In it Dr. F. Brailsford, of the Metropolitan-Vickers research laboratories, describes the present position regarding the improvement of magnetic materials, particularly iron alloys, and indicates that further betterment may result from the continuance of investigations already in progress.

Iron Loss Reduction

The magnitude, in certain circumstances, of what are commonly called the "iron losses," is quoted to emphasize the need for their reduction by improvement of the magnetic characteristics of the materials involved. The author has by this means tried to create a sense of urgency for his plea apparently without sufficient regard for consequential implications, which is hardly fair either to electrical manufacturers or steel makers in this country.

It is repeatedly stated in the paper that this country is many years behind the United States in the production and use of sheet of the highest quality, especially for the core laminations of transformers. It should be remembered that in discovery, from Faraday, through Hadfield and others, to Smith, Garnett and Randall, Great Britain has led the way; but, as in other well-known instances, such as that of the aniline dyes, commercial use has been first developed in other countries.

Progress Retarded by War

In the case of cold-reduced sheet, the war was mainly responsible for the lack of progress. In 1943 the only grade generally available was hot-rolled sheet of 2.35 W/kg at B max = 13,000, and it became necessary to publish amendment No. 1 of B.S. 171: 1936, with a schedule of minimum losses; this was enforced by S.R.O. 1353, which was issued in September, 1943, and revoked in June, 1944, by S.R.O. 643.

The end of the war released a large volume of arrears of orders, and further expansion of electricity supply and export trade rapidly filled up the factories, so that manufacturers had, and still have years of work on their books.

The sheet suppliers are now able to deliver whatever quantity is needed of hot-rolled sheet of better grades, down to 1.9 W/kg, and 1.75 and 1.63 grades are also procurable, though more expensive.

The new designs for the most economical use of cold-reduced sheet cannot well be offered until it is known that the material will be available when the time

comes to build the transformers, so it is easy to appreciate the difficulty of embarking on large-scale production until it is reasonably certain that the output will be absorbed. Cold-reduced sheet from the U.S. has not hitherto been obtainable in this country and the dollar position now makes its importation still more difficult. The manufacturers of sheet and transformers are fully alive to the needs; they are working together to improve it; large sums are being laid out on new equipment and important progress has been made. Recent Amercian inventions, too, point to new methods of construction for obtaining the best results. It is clear that experimental work on a commercial basis is necessary, and economic considerations will not be overlooked. Progress will come as the natural result of co-operation among those concerned, and it will be a process of growth.

STEAM PIPES

THE cracking of steam pipes in several power stations at one time caused quite serious concern. Too many occurrences of this kind were taking place in too short a space of time. If they had continued unchecked, these faults might have threatened to jeopardize the continuity of public supplies of electricity. The investigations of a committee set up in 1947 by the former Central Electricity Board have now been reported upon. The report, to which reference is made on another page, is as straightforward as is the corrosion fatigue which causes these fractures. The recommendations are equally plain and, if followed without delay, should help to abate this expensive nuisance. The committee, whose initial advice has already been acted upon, is continuing its investigations and will welcome information and suggestions.

AVOIDING SECRECY

REFERENCE was made in our issue of 19th August to complaints by local newspapers that the meetings of the local committees of the Eastern Electricity Consultative Council were closed to the Press. Alderman W. J. Bennett, chairman of the Council, has given the Council's views on the subject. He says that, in effect the local committees are of a similar nature to the committees of a local authority whose proceedings are not usually conducted in public. The parallel is hardly an exact one. The primary purpose of the local committees is surely to obtain the views of the public upon the electricity supply system with a view to remedying deficiencies and suggesting improvements.

LATECOMERS' ADVANTAGE

A NICE point was raised at a recent meeting of the Eastern Electricity Consultative Council. It concerned a man who, with a neighbour, applied for a supply. When the terms for connection were quoted, the neighbour withdrew, and the other was left to bear the whole of the annual rental. Later the neighbour was connected by the Electricity Board without charge, as it said it was bound to do because the premises were within fifty yards of its lines. The Board could possibly have refused a supply, sheltering behind the Electricity Supply (Relaxation of Obligations) Order, 1948. But it naturally wants to see the line loaded, and so should the aggrieved consumer, whose rental may be reduced as a result.

UNIONS AND BOARDS

WE conceive it to be the duty of the board of a nationalized industry to give unbiased service to the public as a whole. Its members will generally have attained some eminence in their particular sections of the community and they are selected partly because of their knowledge of the needs of these sections but mainly because of their record of public service. When they join the board it is not as representatives of an industry, a professional body or a political party, but as public servants without external ties. Otherwise they will be trying to serve two masters whose interests are frequently opposed. The General Council of the Trades Union Congress, consisting of men with considerable experience, should realize this, but it resisted attempts made at the Bridlington conference to impose a policy of direct trade union representation on national boards, only on the minor ground that representation should not be solely from the unions in the industries concerned.

Public Lighting Conference

Historical Review of Street Lighting in the City of London

DELEGATES from all over the country have this week been attending the annual conference of the Association of Public Lighting Engineers at Llandudno. The occasion is a noteworthy one as the Association is also celebrating its silver jubilee. The programme has been most comprehensive; apart from the presidential address there have been seven papers and lectures, with a full complement of social events.

The conference was officially opened on Monday by the chairman of the Llandudno Urban District Council (Councillar A. Macfarlane, J.P.). The new president, Mr. A. S. Tapsfield (Corporation of the City of London) was inducted in place of Mr. N. Boydell, M.I.E.E., A.M.I.Mech.E. (Eastbourne), the new vice-president being Mr. P. Richbell, A.M.Inst.Gas.E. (Croydon). An historical review of street lighting in the City of London and an outline of the achievements of the Association was given by Mr. Tapsfield in his presidential address on Tuesday morning. He said that the City had 12.5 miles of main roads and 36 miles of subsidiary.

Mr. A. S. Tapsfield, president of the A.P.L.E.

Early records showed that in 1405 Aldermen of the City were ordered to see that a lighted lantern was hung outside every house along the highway, generally from dusk to 9 p.m. "when the moon was dark." The cost of this lighting fell upon the individual householders, and continued to do so until 1736. In 1461 the Mayor and Aldermen issued a "Standard Specification" for candles to be used in the lanterns and in 1657, City Aldermen were ordered to supply lights where the responsibility for them could not be placed on private householders. After the Great Fire in 1666, the Commissioners of Sewers, as the Public Health Authority was then known, also assumed responsibility for seeing that the streets were lighted.

The first lanterns with glass sides appeared in Cornhill in 1683 and at the same time oil lamps were introduced and the lighting contractor appeared. In 1694 a lease was granted to the patentees of "Convex Lights" (oil lamps with bull's eye glasses), by which they were to provide not fewer than one light to every eight houses in the larger streets, or nine in the smaller, to burn from nightfall to midnight on the 120 dark nights in the year. For this they received 6s a year from each householder.

The year 1736 brought revolutionary changes and it was decided to increase the number of lamps fourfold, by fixing globular glass oil lamps at a distance of 30 yards from each other on each side of the greater streets and 35 yards in the lesser streets. These were lighted from sunset to sunrise throughout the year, all costs becoming a charge on the local rates. Arrangements of this nature continued until the early part of the 19th century, when the first experiments with gas as an illuminant were being made in Golden Lane.

Electricity was first used as an illuminant in this country in 1878, when arc lamps were installed along Holborn Viaduct and Victoria Embankment. In April, 1881, six arc lamps in clear globes were erected in front of the Bank of England on standards 80 ft high. It was later found more advantageous to lower the lamps to 40 ft and enclose them in opal globes.

Other City streets were lit by a variety of arc lamps during the next 30 years, and following a City Lighting Committee

deputation to a number of Continental cities in 1911, about 450 magazine flame arc lamps and 100 high-pressure gas lamps were installed in the main streets in 1913, the average spacing being 120 ft.

But for the war these lamps would have succumbed to modern developments. About 10 miles of the main street lamps are centrally suspended, and in the subsidiary streets the majority are bracket lamps fixed to buildings. One-third of the street lamps and apparatus were demolished or seriously damaged during the war, so much can be said for the lack of enthusiasm for central suspension indicated by the Ministry of Transport Departmental Committee in its Report.

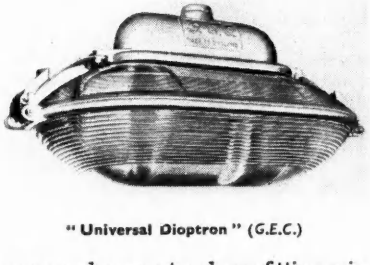
Improvisation has been necessary to maintain a reasonable degree of illumination until a new scheme can be devised and put into operation. Experiments with fluorescent lighting have been carried out and at the moment, said Mr. Tapsfield, a scheme was in course of preparation with a view to extending this form of lighting. Referring to the Government decision to permit the resumption of full lighting he said that many authorities had been unable to take full advantage of the concession and planning would be substantially assisted if essential materials were made more readily available by the responsible authority.

It might be expected that uniformity of lighting throughout the country would soon play a more prominent part in shaping the policy of individual authorities, but a means of co-ordination between contiguous areas was essential if this ideal was to be reached. Increasing uniformity would bring an urge for standardization, but this could only be of use if the standard set was a high one. A high standard of illumination could not possibly be achieved in many areas without some assistance from national funds and the time had arrived for a new Departmental Committee to be set up for the purpose of considering this question.

Display of Equipment

DURING the conference period, delegates have had the opportunity of inspecting an outdoor display of modern lamp columns to which are affixed various makes and types of lanterns, a high proportion of them being fluorescent. These columns and lanterns are erected on the grass plots extending along the promenade which has been placed at the disposal of the Association by the Llandudno Council. While it has not been possible to see the lanterns illuminated, delegates are able to inspect them closely during daylight.

The two principal exhibits of the Metropolitan-Vickers Electrical Co., Ltd., are the "S.O. Fifty" all-"Perspex" totally enclosed lantern for use with 85/140 W sodium discharge lamps and the "Trafford" bowl refractor lantern for 250/400 W mercury discharge lamps burning horizontally. They are both designed for Group A roadways and in the case of the "Trafford" the development of the refractor bowl has permitted a control of the light distribution previously impossible. Other lanterns on view include an example of the open type (Poplar) sodium discharge fitting for Groups A and B roadways and two lanterns for Group 3 roadways; the "Ryde" enclosed refractor lantern for either filament or mercury discharge



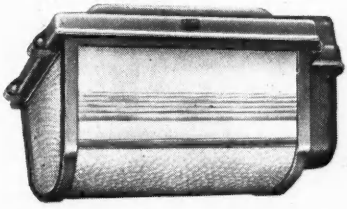
"Universal Dioptron" (G.E.C.)

lamps; and a new two-lamp fitting using two 2 ft 40 W fluorescent lamps.

The ten lanterns shown by the General Electric Co., Ltd., include the "Universal Dioptron" which has

arrangements for top or side entry mounting and a tapped magnetic deflector which enables either a 250 W or 400 W high pressure mercury vapour lamp to be used. Two lanterns for four 5 ft 80 W fluorescent lamps are shown, one vertical and the other horizontal, while sodium street lighting is represented by a totally enclosed fitting for 140 W or 85 W lamps.

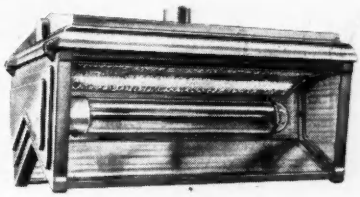
Apart from exhibiting the "Sol-etern" lantern for two 5 ft 80 W fluorescent lamps in conjunction with the "Phidias" artificial stone column, the Revo Electric Co., Ltd., shows the "Silverblue" fitting for use with mercury vapour discharge lamps. A feature of this die-cast lantern is the independent control of light by a dual reflector system in conjunction with prismatic and plain glass panels.



"Silverblue" for mercury vapour discharge lamps (*Revo.*)

A totally enclosed reflector fitting for 140 W sodium lamps shown by the Brighton Lighting & Engineering Co., Ltd., the "Bleeco W" lantern, has curved mirror reflectors to control the top light, while the bottom section is of "W" formation, glazed with clear polished glass. Another fitting, "No. 700," which is shown for the first time, is erected on a two-light column made by the Stanton Ironworks Co., Ltd., and accommodates three 5ft 80 W fluorescent lamps.

The "Wilton-Sieray" lantern for three 80 W fluorescent lamps (Siemens Electric Lamps & Supplies, Ltd.) is the production model of the prototype which was shown last year and an addition to this range is a fitting for two 40 W fluorescent lamps displayed on a Concrete Utilities, Ltd., column. It has pleasing

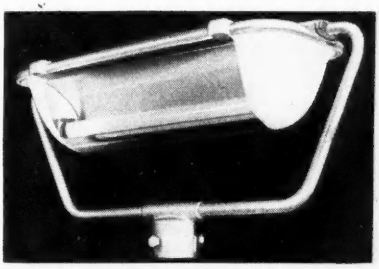


"Bleeco W" sodium lantern (*Brighton Lighting & Engineering Co.*)

lines especially when used with a cradle bracket and if required a model for side mounting is also available. The "Euston-Sieray" 250/400 W mercury vapour lantern is shown on a steel column made by Stewarts & Lloyds, Ltd.

Another fluorescent fitting for main traffic routes, the "Atlas PLQ 3080," shown by Thorn Electrical Industries, Ltd., is arranged so that it may be used as a single, twin or triple tube unit as required. Optical control is provided by three anodized aluminium reflectors secured to the main framework and the control gear is housed inside the lantern.

Two "Solux" prismatic plate lanterns for 85/140 W sodium lamps are shown by the Wardle Engineering Co., Ltd., mounted on a Concrete Utilities "Parade" column with double arm bracket, while in the same series a directional silvered mirror fitting is attached to a "Beta" concrete column by Spun Concrete, Ltd. Other units include the "Arran" lantern for Class B roads, with dome refractor for a 100/200 W gasfilled lamp or 80/125 W mercury discharge lamp and the "Avenue" fitting comprising a cast



"Wilton-Sieray" for two 40 W fluorescent lamps (*Siemens*)

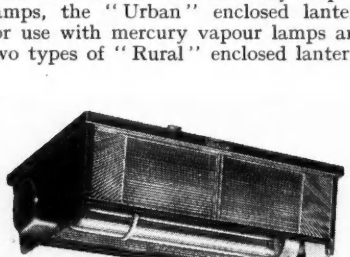
iron gallery with a 14 in opal sphere for 300 W gasfilled lamps.

For Class A route installations the enclosed refractor lantern shown by Holophane, Ltd., is for horizontal-burning 250/400 W mercury discharge lamps, and an acorn bowl refractor lantern shown is suitable for 750 W and 1,000 W tungsten filament and 400 W mercury fluorescent lamps.

The "Lancaster" lantern for use with horizontal-burning mercury discharge lamps, which is shown by the Engineering & Lighting Equipment Co., Ltd., achieves a controlled cut-off light distribution by using anodized aluminium side reflectors to transmit the light through a bottom dish refractor. A fitting for 45/60 W sodium discharge lamps, the "Golden Ray," Mark III, is totally enclosed by a "Perspex" bowl, which not only simplifies cleaning but minimizes damage due to stone throwing.

The "London Minor" lantern displayed by the Edison Swan Electric Co., Ltd., provides a simple but highly efficient means of lighting secondary roads. The light is controlled by a single-piece bowl refractor, which can be used alone or enclosed in a glass outer globe.

Among an interesting selection of "Mazda" lighting equipment for a wide variety of road conditions the British Thomson-Houston Co., Ltd., has fluorescent lanterns, horizontal enclosed lanterns for sodium and mercury vapour lamps, the "Urban" enclosed lantern for use with mercury vapour lamps and two types of "Rural" enclosed lanterns

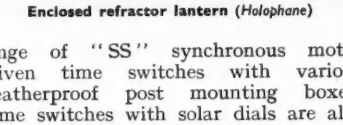


"Solux" lantern (*Wardle Engineering*)

for either mercury vapour or tungsten filament lamps.

In conjunction with several electrical manufacturers Poles, Ltd. display galvanized sheet steel lighting columns assembled from sections of hexagonal form. The Costain Concrete Co., Ltd. shows pre-stressed concrete columns, and "Broadcrete" columns made by Tarslag, Ltd. support Falk Stadelmann and Siemens lanterns.

On the balcony outside the conference hall Sangamo Weston, Ltd. shows its



Enclosed refractor lantern (*Holophane*)

range of "SS" synchronous motor driven time switches with various weatherproof post mounting boxes. Time switches with solar dials are also shown, together with house service meters, a pocket photometer and electrical measuring instruments.

Apart from 15- and 35-day hand wound time switches Venner Time Switches, Ltd. display models driven by a synchronous motor, a synchronous motor with spring reserve and electrically wound models with two types of spring reserve, the last being available for use on a.c. or d.c. mains.

The Automatic Telephone & Electric Co., Ltd. exhibits the "Rhythmatic" system of centralized remote switching, which employs a ripple frequency current, normally in the 400-1,500 c/s band. These currents are superimposed on the existing networks in the form of impulses of various "rhythms" to effect the desired switching operations.

A comprehensive range of time switches shown by the Horstmann Gear Co., Ltd., includes the "K/1" switch which incorporates both solar and hand set dials to permit secondary switching operations during the solar "on" period. It is intended for industrial situations where it is necessary to have a more flexible control than is provided by the ordinary solar dial.

British Association

DISCUSSION ON SIR ARTHUR FLEMING'S ADDRESS

BRIDGING the gap between science and industry was, as briefly reported last week, the subject of the presidential address to Section G (Engineering) by Sir Arthur P. M. Fleming (Metropolitan-Vickers).

Sir Andrew McCance (president, Iron and Steel Institute) opened the discussion by saying that the time which elapsed between the inception of an idea and its industrial and commercial acceptance by the world at large had generally been about 25 years. It was so with the steam turbine and the electric lamp. That kind of gap had to be accepted, but there was no need to be unduly worried about it because he did not believe much could be done to correct it. The development of completely new ideas was a slow and troublesome job. The kind of gap which worried most of those who thought about this subject was the one that was taking place in the industrial application of old ideas which were already known and accepted by the scientific world, but had been slow to penetrate into the industrial world. That was the main problem they had to worry about and gave rise to just criticism of our industries, for it was harmful to national development.

Temporary Phase

It was a temporary phase and would pass just so soon as they had trained, both scientifically and industrially, a full complement of managers and directors. They had already gone a long way in that direction, but must not be in too great a hurry. They had still some years to go, for they were still very dependent on the human factor and on the trend of opinion among a war-experienced younger generation which was somewhat intolerant of guidance.

To make a man a scientist required a training period of five or six years. They were the most formative of a man's life. In the industrial world a similar sequence of events was taking place and they became so stereotyped in their own habits of thought that they simply did not understand one another's language. So a third man was engaged to act as interpreter—to bridge the gap between the two points of view. They were all to blame for the result.

He had always believed that in specialization lay the main cause of the sluggishness with which scientific methods had been applied to British industry. They were so intent on turning out a finished product that they spent too much time on each job. A little less finish and they would be more successful in the practical realities.

Training of Managers

The gap between the discovery of a new scientific method and its adoption by industry would continue to exist until such time as every acting manager, before he entered industry, had had the benefit of a technical training and every scientist realized that in management there was a skill that had to be learned like every other skill.

From physics it was known that every active system had an appropriate period of relaxation. The electrical industry did not allow other industries a long enough period in which to relax! The electrical and chemical industries had a higher proportion of technically trained men on their staffs than had any other industries. In the iron and steel industry there was also a high density of technically trained staff, and its record of recovery and achievement since the war was now common knowledge. On the other hand, he knew of an industry in which there were spread among more than 400 firms fewer than 20 technically trained staff men. What chance had they of keeping abreast of scientific advances?

Wing-Commander T. R. Cave-Browne-Cave (Southampton University) said he was extremely doubtful whether the universities would successfully develop that understanding and that personality which were so enormously important. Another important point was effective contact between university lecturers and the real problems of industry for which they were training their students. He had no re-

search student in his department at Southampton because he felt that students should go out into industry first and get practical experience. Then they should go back to the university as research students.

Mr. J. R. Clarke (Sheffield) said that a large number of graduates left the universities as technicians and it was the intention of the Government to develop that aspect. Graduates who had general degrees made excellent technicians and they might well develop personality better than those who had obtained special honours degrees. The tendency was to offer them jobs in which they would stay and these men were likely to remain as routine testers all their lives.

The president said that the Institution of Electrical Engineers had a Committee dealing with this point.

American Method

Dr. E. Marsden (London) said that industry was organized too much for static conditions. It ought to be organized for progressive change and the only way to do that was to get the right type of engineer into industry. The men who eventually got the best jobs were those who had not been spoiled and sterilized and had all the initiative knocked out of them by the apprenticeship scheme. The difference between Britain and America in this respect was not a matter of facilities but of method. In America it was the practice to put together in a team, say, a physicist, a mechanical engineer, a chemical engineer and a chemist, tell them the problem and leave them to get on with the job under their own leadership, knowing that Monday week was the datum line! To let men follow a process right through from the laboratory to the prototype and the development stage would shorten the gap between the inception of the idea and its practical application considerably.

Dr. B. J. A. Bard (London) said the thing to remember was that the primary object of industrial research was to study relentlessly the improvement of existing materials. At the Billingham works although the same ammonia conversion plant, as such, was in use there 20 years ago, improved technique and a better catalyst had raised the conversion efficiency from 6 per cent to 22 per cent. That was a challenge to every management and every firm.

Sir Claude Gibb (C. A. Parsons & Co., Ltd.) said that fundamental research could often be carried out *in vacuo*, but applied research teams must never be isolated from the operating designers, who after all must produce designs so economic in production and efficient in operation that they would find a ready market and thus make a moral profit, of which the Chancellor of the Exchequer took at least 60 per cent thus making further research and extension of research impossible and thereby killing this country. He added that he said this in all seriousness. The commercial designer, particularly in heavy engineering, was apt to say that if he applied an improvement to a modern design, he would know in three years' time whether it worked and in 5 or 10 years' time he would know, as a long-term policy, whether it could be incorporated into the design and be entirely reliable. By that time he might have committed his company to £40,000,000 on equipment.

Design and Research

The president, from his knowledge of the electrical industry, knew something of the sleepless nights that could result from boldness in design when, perhaps, a sum of £500,000 might be involved. Therefore, it was better that designers should work side by side with the research workers so that they could be quite sure and have every aspect investigated. It was the commercial designer working in conjunction with the production shops who must, by the success of the design and manufacturing technique, make the profit from which research was financed, regardless of whether the research was conducted by an individual company, by a university, or by the research associations. The money had to come from the result of productive effort. If every research worker had a little more commercial instinct, there would be less of the gap between science and industry than was the case to-day.

Prof. H. E. Hackett (Dublin) remarked that some years ago the Institution of Electrical Engineers published a very valuable report for the benefit of those teaching engineers at universities and technical colleges. The primary aim was

that students should be trained to assess evidence and develop the ability to judge, but he saw no evidence anywhere that the engineering schools of Great Britain were making any effort in that direction. How were they going to estimate what the engineering student should know? The university teaching machine was not working at the best efficiency and something must be done to change it.

Dr. A. T. Bowden (C. A. Parsons & Co.) suggested that one of the greatest troubles was at managerial level and said he was impressed in this connection with the remark of Sir Andrew McCance when he said the trouble was not so much one of putting over new materials as in making better use of existing materials.

Sir Henry Tizard (chairman of the Advisory Council on Scientific Policy and the Defence Research Policy Committee) winding up the discussion, said he doubted whether we should be far behind when it came to the industrial application of discoveries made in the study of nuclear phenomena. If we were, it would not be due to the shortage of adequately experienced scientists but rather to a shortage of engineers with the right kind of education.

Position of Small Industrial Units

Unless the application of science to industry in this country could be hastened, we should inevitably go downhill. Reforms that depended on better education were necessarily slow to achieve and in the meantime they must recognize that the large majority of managers of British industry did not read scientific reports and would not understand them if they did! He had in mind particularly the hundreds of small industrial units which were unable to bear the cost of extensive research laboratories. It was for their benefit that the industrial research associations were formed, but their work had been far less productive of practical results than their originators hoped.

Even in the large industrial units, which maintained their own organizations for research and development, there was an apparent reluctance to embark on adventurous projects, possibly for the same reason—that they were not prepared to risk the capital expenditure on development. He felt convinced that they must find a way of spending far more on development, large-scale application and re-equipment than they had done in the past. It was almost useless to extend facilities for industrial and scientific research unless they also proposed to take promising results a stage further. It might well be that it was the ability and willingness to finance new unproven developments and processes, rather than the volume of research, which now really determined the rate of application of research to industry.

Detecting Vibration

One of the papers presented on the sixth morning of the meeting was by Mr. G. Snowball, who described electrical methods of inducing and detecting vibration for testing purposes. For example, vibration causes the tubes in steam condensers of turbo-alternators to become loose. To determine how resonance is affected by the way in which the tubes are supported, sample assemblies were subjected to an alternating force generated by a transducer. The a.c. input to the moving coil of the latter was obtained through an amplifier from an oscillator, creating a good wave form over a range of 5 to 200 c/s. The resonant modes of vibration were detected by a capacitive pick-up (double channel) and plotted, one channel acting as a phase reference to the second, which was moved along the tube being tested.

The object of the tests was to predict resonant frequencies relative to supporting span ratio, to enable vibration to be damped down.

Excursions made by the Section included visits to the Carville power station (North Eastern Division, B.E.A.), to the Grubb-Parsons optical works, the Pametrada research establishment and the works of A. Reyrolle & Co., Ltd.

Safety in Mines Conference

AN I.L.O. technical tripartite conference on safety in coal mines began in Geneva on 12th September and will continue until 24th September. It was preceded by a meeting of electrical experts held on 8th, 9th and 10th September. The purpose of the conference is to consider a draft Model Code of Safety Regulations for Underground Work in Coal Mines.

Views on the News

By REFLECTOR

FROM time to time I receive reports of the willingness of residents in rural areas to install electrical appliances as soon as the service becomes available. The latest, received from the Yorkshire Electricity Board, is a further indication of the eagerness with which rural dwellers await a supply. The mobile service centre which the Board has recently put into use has proved so popular that many orders have been received for electrical appliances from inhabitants of villages whose supply will not be made available until the spring of next year. This not only shows the value of this mobile unit in propagating the use of electricity, but also emphasizes that the rural dweller is very much alive to the amenities which electricity can bring.

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I recently read of a complaint by a foreign visitor that, although he understood English, he could not comprehend the announcements from the loudspeakers in the London railway stations. I am not surprised, for the public address systems are installed without much regard to acoustics; the volume is badly regulated; and the announcers appear to adopt extraordinary accents or suffer from some other vocal disability. It would be a wise move on the part of manufacturers and installers of these systems (whether in railway stations or elsewhere) to instruct the users in the proper way of operating them.

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If the Eastern Electricity Board is not the most active of the fourteen, it certainly gives most indications of its activities. The latest I have seen of these is an advertisement appearing in Area newspapers offering "guaranteed" electric lamps. It explains the difference between coiled-coil and single-coil lamps, gives their prices, and assures the reader that his Electricity Service Centre sells only the best lamps of British manufacture, and guarantees them against premature failure due to faulty material or workmanship. While lamp manufacturers may appreciate this valuable supplement to their own advertising, the lamp retailers may feel that they are being deprived of one of their "bread-and-butter" lines by an authority which should concentrate on bigger game.

★ ★ ★

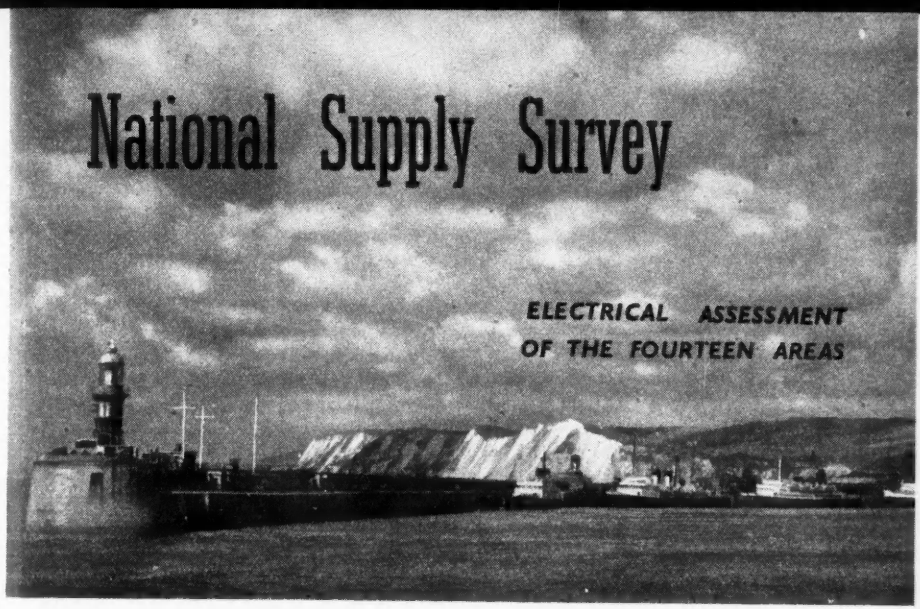
Opponents of overhead lines are not having it all their own way. At a meeting of Ledbury Rural District Council, when the proposed line over the Malvern Hills was discussed, one member contended that there was beauty in pylons. He has a worthy supporter in Mr. George Bernard Shaw, who has sent a message to Malvern in which he declares: "People are taking it for granted that I am dead against pylons. On the contrary, I am all for them. I like them." One proviso he makes in his acceptance of engineering works in general is that the engineer shall not spoil them by endeavouring to be artistic, "torturing honest cast iron into sham acanthus leaves and the like."

★ ★ ★

A small stir has been caused in Manchester by the nature of some of the contents of "Beacon," the employees' magazine of the North Western Electricity Board. The *Daily Dispatch* casts doubts upon the necessity for an article on the knitting of a baby's "coatee." The Board's Public Relations Officer sought to justify the article on the ground that it was important to secure not only the interest of the employees but of their wives as well. The *Dispatch* remained unconvinced though it did not deny the usefulness of "house" magazines. Perhaps it would have been satisfied if the coatee had been electrically heated.

★ ★ ★

Headlines in the *Caernarvon and Denbigh Herald* announce: "Electricity for Export: Unsuitable for Local Needs." This looks like an endeavour to meet foreign buyers' requirements, but in point of fact the note in question relates to the inability of certain Welsh water-power schemes to provide a continuous supply, being designed for peak operation only.



4. SOUTH EASTERN AREA

IN an attempt to show the electricity supply make-up of the South Eastern Area with which the Area Board and the Division were faced on vesting day we must first mention the fifty undertakings which varied in size from 525 kW (Peacehaven) to 86,595 kW (London & Home Counties J.E.A.). These undertakings are named for convenience in tabular form in respect of the new Sub-Areas of the Board, by which they have been embraced. Strode Park, Herne Bay, was the only non-statutory undertaking which existed in the Area at that time, and it has since been absorbed by the Board.

Associated with some of these undertakings were 27 generating stations with a total effective capacity of 433 MW. The general generation picture we wish to portray is presented by the table on page 510 which has been brought up to date by the addition of Kingston "B" which was opened by H.M. the King last autumn.

Of these 28 stations 16 are steam operated and have a total effective capacity of 474·73 MW, while 12 are diesel stations which have a total effective capacity of 10·91 MW. The additional 53 MW is explained by Kingston "B." The steam stations have a total coal storage capacity of over 320,000 tons.

Surrey Sub-Area. Epsom & Ewell Corporation; Guildford Corporation; Guildford Gas Light & Coke Co.; Kingston-upon-Thames Corporation; London & Home Counties J.E.A.; Reigate Corporation; Richmond (Surrey) E. L. & P. Co.; Woking Electric Supply Co.; Walton & Weybridge U.D.C.

Croydon and West Kent Sub-Area. Croydon Corporation; County of London E. S. Co. (Purley District); Horley & District E. S. Co.; Sevenoaks & District Electricity Co.; West Kent Electric Co.

Kent Sub-Area. Ashford U.D.C.; Canterbury Corporation; Dover Corporation; Faversham Corporation; Folkestone E. S. Co.; Gillingham Corporation; Gravesend Corporation; Herne Bay & District E. S. Co.; Kent Electric Power Co.; Maidstone Corporation; Margate, Broadstairs & District Electricity Board; Ramsgate & District E. S. Co.; Sheerness & District E. S. Co.; South-East Kent E. P. Co.; Whitstable Electric Co.

East Sussex and South-West Kent Sub-Area. Bexhill Corporation; Eastbourne Corporation; East Grinstead U.D.C.; Hastings Corporation; Tonbridge U.D.C.; Tunbridge Wells Corporation; Weald E. S. Co.

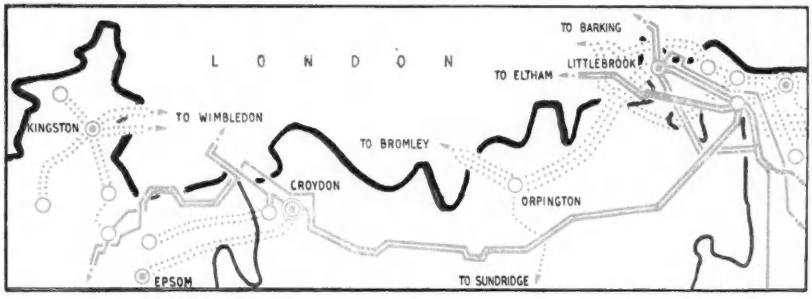
Mid-Sussex Sub-Area. Brighton Corporation; Burgess Hill Electricity, Ltd.; Central Sussex Electricity, Ltd.; Horsham U.D.C.; Hove Corporation; Lewes & District E. S. Co.; Peacehaven E. L. & P. Co.; Ringmer & District E.S. Co.; Seaford and Newhaven Electricity, Ltd.; Shoreham & District E. S. Co.; Steyning Electricity, Ltd.; Sussex E.S. Co.; Uckfield Gas & Electricity Co.; Worthing Corporation.

Our title picture shows Dover, one of the country's most historic ports, which is in the South Eastern Area

The general make-up also included a 132 kV transmission system, part of the grid, which is based on the normal three-switch type of substation, except where additional transmission lines have necessitated additional transformer connections; e.g., Brighton substation (120 MVA) has seven switches; Woking (120 MVA), five; Littlebrook (90 MVA), eight; Northfleet (90 MVA), fourteen; and Hastings (37·5 MVA), six.

The area population is about three million and there were 893,500 consumers (mainly domestic) on 31st March last. The total consumption was about 2,000 million kWh (excluding railway load) for 1948/49 with a max. demand of 598 MW in March. Serving these consumers are 85 show-rooms or service centres as follows, arranged in sub-area order for convenience:—

Surrey Sub-Area. — Carshalton, Cobham, Dorking, East Molesey, Epsom, Esher, Ewell, Guildford, Kingston,



This inset shows in clearer detail the main transmission in the area near London

Satellite town
Light engineering
Shipbuilding
Light industry
Coal mining
Cement works

This map, specially prepared by the *Electrical Review*, indicates the principal population density background:—dense urban in white, urban in blue, dense

Leatherhead, Reigate and Redhill, Richmond, Shepperton, Stoneleigh Park, Surbiton, Sutton, Twickenham, Wallington, Walton, Weybridge, Woking.

Kent Sub-Area.—Ashford, Broadstairs, Canterbury, Deal, Dover, Faversham, Folkestone, Gillingham, Gravesend, Herne Bay, Hythe, Maidstone, Margate, New Romney, Rainham, Ramsgate, Rochester, Sheerness, Sittingbourne, Whitstable.

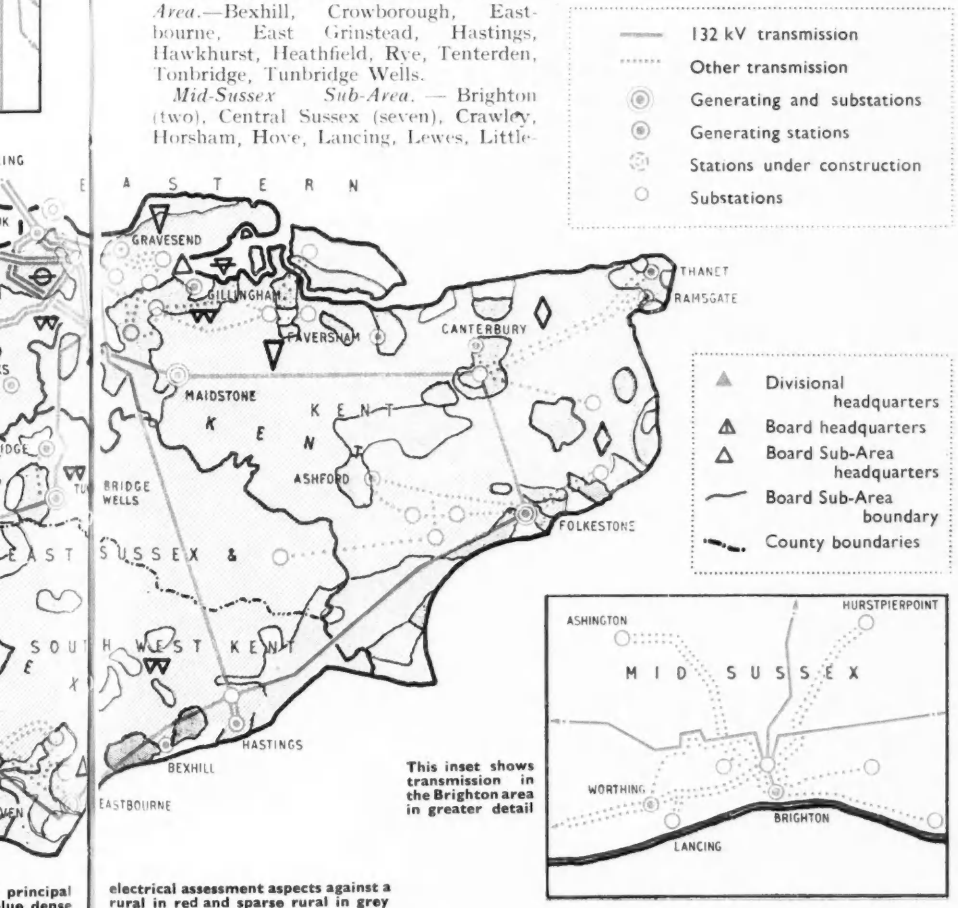
Croydon & West Kent Sub-Area.—Croydon (two), Purley (five), Sevenoaks & Horley (four), West Kent (three).

East Sussex & South-West Kent Sub-Area.—Bexhill, Crowborough, Eastbourne, East Grinstead, Hastings, Hawkhurst, Heathfield, Rye, Tenterden, Tonbridge, Tunbridge Wells.

Mid-Sussex Sub-Area. — Brighton (two), Central Sussex (seven), Crawley, Horsham, Hove, Lancing, Lewes, Littlehampton, Peacehaven, Shoreham, Worthing.

Without the presentation of some sort of a load analysis the make-up just outlined has little or no meaning. During the year ended 31st March, 1949, the Division supplied to the Board and British Railways a total of about 2,300 million kWh, of which 1,472 million kWh was generated within the Division and 828 million "imported" from other Divisions.

The Board's sales quoted for the same year therefore indicate a railway supply



electrical assessment aspects against a rural in red and sparse rural in grey

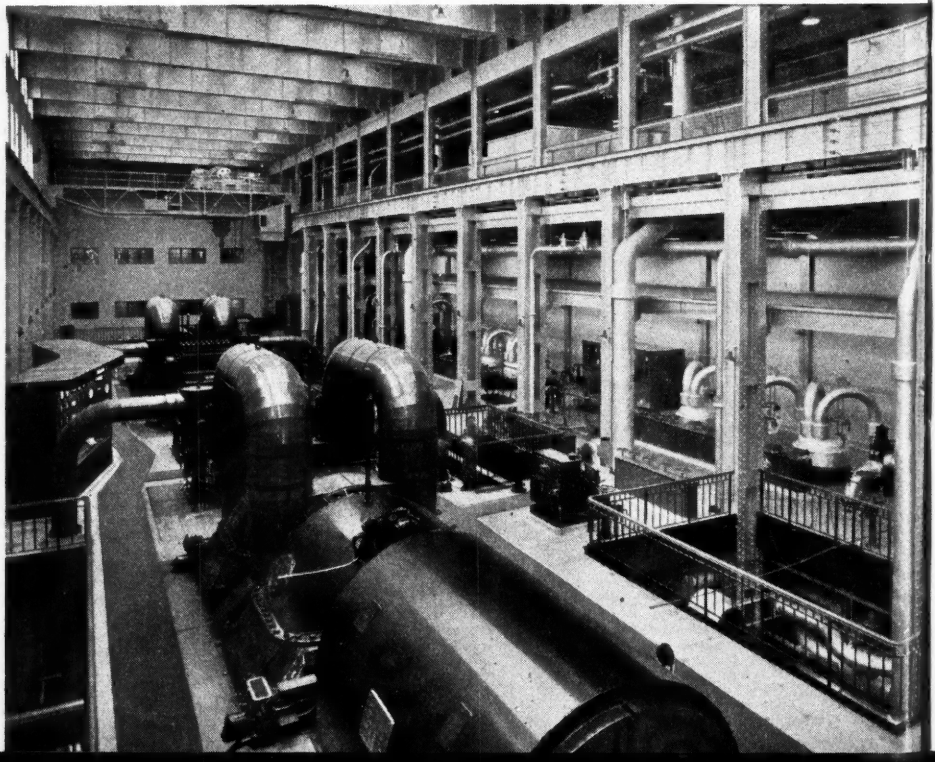
of about 200 million kWh. Unfortunately we are unable to show a further analysis in terms of consumption, but about 25 per cent of the total demand in the area, i.e., about 150,000 kVA, represents the total simultaneous industrial load. The dominating remainder of the load is represented by domestic and commercial demands. Of the industrial load the approximate proportions created by some of the larger industries are: Cement, 15 per cent; light and general engineering, 8 per cent; paper and plaster board, 6 per cent; building materials, other than cement, 4 per cent; cables (manufacture), 3 per cent.

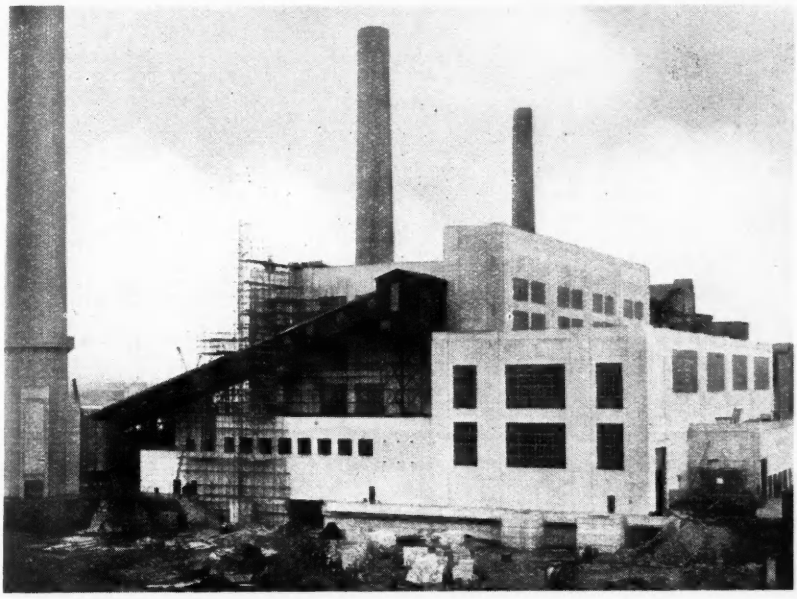
In terms of consumers a very rough indication of the non-industrial loads or consumptions is: Domestic consumers, 789,000 kW; commercial consumers, 87,000 kW; and farm consumers, 6,000 kW. Overall the consumers' demands range from the small cottage with three lights to the largest consumer demanding about 22,000 kW.

As regards charges, excluding prepayment tariffs there are about 300 published tariffs now in force. Of these about 180 are flat-rate and 120 are two-part for all types of consumers. About 60 of the flat-rate tariffs are for lighting, ranging from 4.2d per kWh to 9.0d per kWh. Sixty-five per cent of the domestic consumers are on two-part tariffs, and 78 per cent of these are charged on a floor-area basis. At present the kWh charge of the two-part tariffs varies from 0.75d to 1.5d.

The area covered by the South Eastern Board is the third smallest of all the fourteen supply areas. It has a total of 3,256 sq miles of land, 757 sq miles of which is urban and 2,499 sq miles rural. The area embraces the greater parts of the counties of Kent, Sussex and Surrey, and a small part of Middlesex, and from the general interest point of view the two outstanding points are Canterbury, the hub of the Church of England, with the age-old Pilgrim roads radiating from it, and the almost exact S.E. point of the country, Dover, which has always been a place of national im-

Kingston "B" was opened by H.M. the King last autumn





Littlebrook "B" is likely to be completed next year

portance. The area is almost entirely embraced by the ex-C.E.B. South Eastern Area or the St. Paul's (London) grid control area (see special map *Electrical Review*, 3rd June, 1949.).

The south-eastern seaboard forms the Area boundary for nearly 160 miles from Littlehampton in the south-west to Margate in the extreme east. The western boundary extends from Littlehampton, west of Horsham and Guildford and on to Woking, Twickenham and Richmond, while to the north the joint boundary with the London Area embraces some of the dormitory suburbs of London, including Surbiton, Croydon and Orpington, and from the London eastern boundary the Thames borders the Area to the east. The dormitory suburbs in the north-west include busy shopping centres and thus represent the most dense domestic and commercial loads. The most industrialized part is that adjoining the south bank of the Thames where cement and paper manufacturing, oil and cake mills, general engineering and miscellaneous industries create a demand closely approaching 50,000 kW. In the Croydon and Purley districts the demand from the many medium and small factories is about 10,000 kW. There is a further concentration of industrial and trolley-bus load around Brighton to the extent of some 7,000 kW.

The numerous holiday towns on the coast possess many large hotels with individual loads of the order of 500 kW; also along this line such busy ports as Newhaven, Folkestone, Dover and Gravesend make very considerable contributions to the load. In the centre of the Area there is a considerable and varied high-quality farming tract which embraces the world-famed Kent and Sussex hopfields and the fruit orchards of the "Garden of England." The National Farm Survey of England and Wales, shows that the number of the farms supplied compares favourably with that recorded for any other area, the connections in Surrey amounting to no less than 62 per cent of the total number of farms in that county. All the same the domestic and commercial load dominates the

Grand Hotel, Eastbourne, and the South Downs, both contribute to general "South Eastern" atmosphere

scene, but a particularly characteristic feature is the fact that, with one exception, cement, no single industry accounts for more than 4 per cent of the total demand.

Some notable industrial consumers include the Associated Portland Cement Manufacturers who are responsible for about 13 per cent of the total industrial load; A. E. Read, who devote about 2.3 per cent of the total industrial consump-

GENERATING STATIONS OPERATED BY SOUTH-EASTERN DIVISION

Station	Previous Owners	Type of Station	Total Installed Gen. Plant Capacity MW	Effective Gen. Plant Capacity MW	Method of Operation
Ashford	Ashford U.D.C.	Oil	2.05	2.05	2-shift†
Bexhill	Bexhill Borough Council	Oil	0.2	0.2	2-shift
Brighton "A"	Brighton County Borough Council	Steam	190	156	3-shift
Canterbury	Canterbury Corporation	Steam	5.125	4.0	2-shift*
Croydon "A"	Croydon County Borough Council	Steam	87	68	3-shift
Eastbourne	Eastbourne County Borough Council	Steam	9	8.5	2-shift*
East Grinstead	East Grinstead U.D.C.	Oil	0.4	0.4	2-shift
Epsom	Epsom & Ewell Corporation	Oil	1	1	2-shift
Faversham	Faversham Town Council	Oil and producer gas	0.55	0.55	2-shift
Folkestone	Folkestone E.S. Co.	Steam	7.125	3.8	2-shift*
Gillingham	Gillingham Corporation	Oil	0.62	0.62	2-shift
Gravesend	Gravesend Borough Council	Steam	12	9.8	2-shift*
Guildford	Guildford Corporation	Steam	11.25	10.75	2-shift*
Hastings	Hastings Corporation	Steam	15.75	12.75	2-shift*
Horsham	Horsham U.D.C.	Steam and oil	1.25	0.8	2-shift
Kingston "A"	Kingston Corporation	Steam	5.75	4.0	2-shift*
Kingston "B"	In course of construction 1st April 1948	Steam	63 1st April 1949	53 1st April, 1949	2-shift*
Lewes	Lewes & District E.S. Co.	Oil	1.215	1.2	2-shift
Littlebrook "A"	Kent E.P. Co.	Steam	120	115	3-shift
Maidstone	Maidstone Corporation	Steam	16.825	10.75	2-shift*
Newhaven	Seaford & Newhaven Elect. Co.	Oil	0.6	0.6	2-shift
Ramsgate	Ramsgate & District E.S. Co.	Steam	3	2.0	2-shift*
Sevenoaks	Sevenoaks & District E. Co.	Oil	0.9	0.9	2-shift
Thanet	Margate, Broadstairs & District Elect. Board	Steam	6	3.75	2-shift*
Tonbridge	Tonbridge U.D.C.	Oil	0.22	0.22	2-shift
Tunbridge Wells	Tunbridge Wells Corporation	Steam	11.25	8.5	2-shift*
Woking	Woking E.S. Co.	Steam	7	4.0	2-shift*
Worthing	Worthing Borough Council	Oil	2.5	2.5	2-shift

* 2-shift stations that can work 3-shift in emergency.

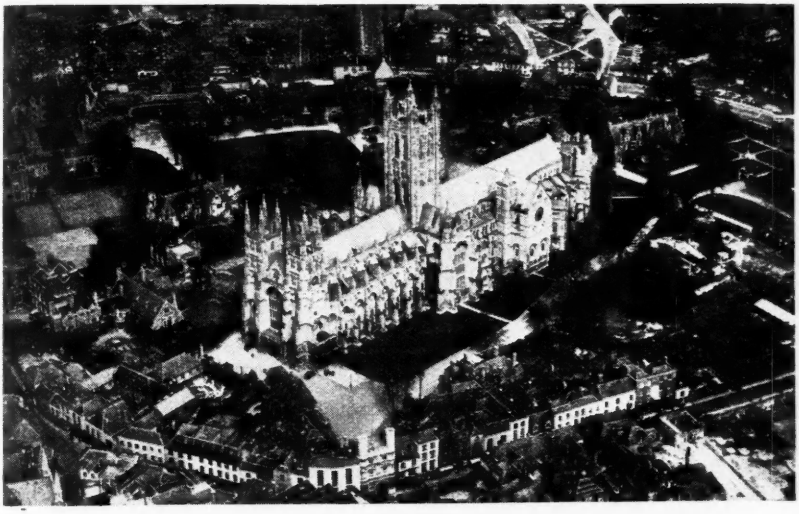
tion to paper manufacturing; and W. T. Henley's Telegraph Works Co., Ltd., whose demand is something like 2.0 per cent of the total industrial load.

The film studio at Shepperton of the British Lion Studio Co., Ltd., with premises covering 80 acres and employing 3,000 hands, has produced about 25 films, including some in "Technicolor" such as "An Ideal Husband," "Bonnie Prince Charlie," "Elizabeth of Ladymead" and "The Winslow Boy." The demand for "Technicolor" productions is likely to reach 2,500 kW. The grounds and premises, at Littleton Park, at one time constituted the country residence of Sir Edward Nichols. They are favourably situated by the Queen Mary Reservoir where the Metropolitan Water Board will have an ultimate pumping load of 3,000 h.p.

Gypsum Mines, Ltd., Mountfield, have a load of about 2,000 kW, two-thirds of which is for underground work such as compressor driving and haulage, largely for grinding in the manufacture of Keenes cement and other building materials. At the works at Nutfield of Fullers Earth Union, Ltd., an installed load of about 2,670 h.p. is made up as follows: Milling, 957; handling earth, crushing and drying, 170; dust extraction, 125; processing earth, 100; kiln drying, 357; pumping, 800; boiler house fans, 92; and lighting 70 h.p.

In this sort of load analysis by location we must again refer to the railways because there is only one other Area comparable to the South Eastern one in this respect, i.e., the Southern Area. Bulk supplies are taken by British Railways (Southern Region) from the major transmission system, i.e., the grid at Brighton, Croydon, Eastbourne, Hastings, Leatherhead, Northfleet, Three Bridges, Tunbridge Wells and Woking. Trolley-bus traction is an important load, and water and sewage pumping are among the other public services supplied. There are over 80,000 public lighting points in the area. Decorative lighting at the seaside resorts has a good off-peak characteristic.

But again we emphasize that the area is mainly a domestic one, and so the load is influenced to a marked degree by the weather, the normal load varying by 15 per cent or more in exceptional weather conditions. To illustrate the



Canterbury Cathedral, one of the chief glories of the Area.—*Aerofilms Photo.*

degree of development of the domestic load throughout a large portion of the area we may point to the facts that well over 100,000 cookers are out on hire and that the domestic consumption is accounted for to a great extent by the high proportion of modern flats and houses which are practically all-electric.

To continue the locational analysis, we now take a glimpse at the population, consumer and load distributions. Let us deal with the population densities in terms of the Sub-Areas. The Surrey Sub-Area has a population (1948 estimate) of 814,000 and an area of 395 sq miles, of which 50 per cent is rural, the density being 2,060 per sq mile. Corresponding figures for the other Sub-Areas are: Croydon and West Kent, 622,500, 364, 70 and 1,668; Kent, 769,300, 1,157, 82 and 665; East Sussex and South-West Kent, 382,800, 786, 92 and 486; Mid-Sussex, 505,000, 554, 77 and 908. To point to some extremes of population density we have Croydon, 12,160 per sq mile; Sutton, 11,968; Hove, 10,240; Rochester, 6,240; and Eastbourne, 5,568; all in the dense urban range. In the sparse rural range there are: Guildford R.D., 422 per sq mile; Sevenoaks R.D., 416; Horsham R.D., 221; Battle R.D., 160; and Romney Marsh R.D., 19.

Throughout the whole area the consumer density is 276 per sq mile and the load density 190 kW per sq mile. The above population figures represent a reasonable distribution of population for an area of this size, without outstanding extremes. They indicate substantial and fairly well distributed and varied loads, with the domestic load predominating and have led us to adopt the population density background for our specially prepared survey map. This presents a broad picture of the electrical assessment of the area.

A direct electrical characteristic of the area is its outstanding potentialities for the generation of electricity. First, there are the numerous positions where abundant circulating water is available. Then there are means of transporting coal cheaply by sea and river. Thirdly, there is the possibility of important developments in this way in the Kent coalfields. There is a reasonable measure of hope that the Division will be able to generate at prices closely approaching those of

South Eastern Board executive team. Left to right: Messrs. N. Elliott, E. Sinnott, A. L. Burnell, W. A. Gallon, C. F. Wells and W. R. T. Skinner

other Divisions situated on large coalfields.

Such considerations are already reflected in a substantial power station constructional programme for the next few years, the early part of which will probably bring the total effective plant capacity of the Division up to 766 MW next year, based on B.E.A. directions so far given. The construction programme is at present: Brighton "B" with a designed ultimate generating capacity of 315 MW (210 MW by 1954); Croydon "B," 315 MW (210 MW by 1951); Kingston "B," 123 MW by 1950; Littlebrook "B," 120 MW by 1950; Littlebrook "C," 240 MW (180 MW by 1954).

The Board's assessment of the future prospects is as follows. It appears that future development will be chiefly in the domestic and agricultural spheres, although quite an appreciable amount of industrial load is likely to mature in the near future, e.g., increased supplies to cement works, collieries and, in one instance, over 1,600 kVA for a large gasworks. It is expected that new industries will be set up, as has been the case recently at Ramsgate, to absorb pockets of unemployment which exist in parts of the area. The enlargement of Shoreham Harbour, which is being carried out to improve the access of colliers serving the new Brighton power station, will also provide better facilities for the establishment of new works there.

A development which is receiving special attention is the projected satellite town at Crawley where it is proposed to house 50,000 persons and to launch new industries in the Power Park which forms part of the scheme. At Croydon a number of new housing schemes are already in being, and a further 2,000 or so new houses are to be erected in the Addington region. At St. Paul's Cray the new L.C.C. estate will be a self-contained town with 4,000 houses, a shopping centre, churches, schools and various amenities.

Examples of high consumer saturation figures, of the order of 90 per cent, are Brighton, Croydon, Eastbourne, Folkestone, Gravesend, Hastings, Horsham, Hove, Kingston, Maidstone, Purley, Surbiton, Tunbridge Wells and Worthing. The other extreme, districts entirely undeveloped, by which we mean places where the connection of a new consumer would mean a major distribution extension, is represented only by a few of the more remote districts of the Weald.

South Eastern Division executive team. Front row, left to right: Messrs. P. Briggs, W. C. Parker, W. B. Shannon. Back row: Messrs. H. Marriott, C. F. Bolton, H. B. Laine and T. Penman

Finally, in a word about the controlling organizations, namely, the South Eastern Electricity Board and the South Eastern Division of the British Electricity Authority, we emphasize again that these National Supply Survey articles are definitely designed as broad area electrical surveys and not as accounts of the organizations and their work.

The organizations are parts of the area make-up, however; indeed, the most important parts, and as such it is essential to outline their structures. This we are content to do mainly by means of organization "trees" and to some extent locationally by the specially prepared map.

The chairman of the Board, Mr. Norman R. Elliott, and his deputy, Mr. W. R. T. Skinner, with their principal officers, i.e., the engineer-in-chief, Mr. W. A. Gallon; the secretary, Mr. A. L. Burnell; the chief accountant, Mr. E. Sinnott; and the chief commercial officer, Mr. C. F. Wells, work as an executive team at their headquarters at 10, Queens Gardens, Hove.

The headquarters of the Division, British Electricity House, Lower Ham Road, Kingston-upon-Thames, is adjacent to the Kingston "B" power station; actually, it is part of the station buildings as originally designed. From here the needs of the Division are to be tended by the divisional controller, Mr. W. C. Parker, and his executive staff, namely, chief generation engineer (operation), Mr. P. Briggs; divisional secretary, Mr. T. Penman; divisional accountant, Mr. H. Marriott; chief generation engineer (construction), Mr. W. B. Shannon; transmission engineer, Mr. C. F. Bolton; and technical engineer, Mr. H. B. Laine.

We are indebted to Mr. Elliott and Mr. Parker for their co-operation in making it possible for us to publish this survey, and to some of their principal officers for help in obtaining the information under difficult conditions.

Educational

The 1949-50 session of the Sir John Cass Technical Institute commences on 26th September. The prospectus giving particulars of courses, dates of enrolment and fees is obtainable from the Principal, Jewry Street, Aldgate, London, E.C.3.

Fire Research

STATISTICS ANALYSED AND CAUSES STUDIED

AN account of the second year's activities of the joint fire research organization (D.S.I.R. and Fire Officers' Committee) is given in a publication entitled "Fire Research, 1948" (H.M. Stationery Office, 1s 2d post free, 35 cents U.S.A.) which contains the short report of the Fire Research Board with the more detailed report of the director of fire research.

The causes of fires that occurred in 1947 are analysed, statistical tables summarized and outlines given of experimental investigations of the initiation and growth of fires, means of their suppression and the behaviour of different materials in fires.

Supposed Causes of Fires.*

In buildings	1946		1947	
	No.	%	No.	%
Cooker...	328	0.9	394	1.1
Fire, heater, radiator...	952	2.7	1,195	3.2
Iron	310	0.9	384	1.0
Motor	360	1.0	383	1.0
Refrigerator	392	1.1	557	1.5
Wire and cable ...	2,108	6.1	2,598	7.0
Wireless	120	0.3	243	0.7
Other apparatus ...	496	1.4	540	1.4
Lightning	52	0.1	68	0.2
Static electricity ...	8	—	22	0.1
Outside buildings				
Motor	20	0.1	50	0.1
Wire and cable ...	1,468	6.5	1,880	5.2
Other apparatus ...	176	0.8	167	0.5
Lightning	80	0.4	44	0.1

* Totals, all causes: 34,756 indoors and 22,596 outside in 1946, increased to 37,278 indoors and 36,275 outside in 1947.

In addition to giving advice and information to industrial and commercial bodies, the organization has conducted investigations for many Government Departments, the B.S.I. and the E.R.A.

In response to a request from the E.R.A. an analysis was made of fires reported in 1946 to obtain data on those alleged to be of electrical origin. Of fires in buildings in that year, 10 per cent were attributed to electrical causes and 48 per cent of this fraction occurred in houses and flats. Of fires in the open, 3 per cent were said to have been caused electrically and 78 per cent of this fraction occurred in road vehicles. Of electrical fires inside buildings, 41 per cent were attributed to short circuits, etc., in wires and cables and the remainder to appliances.

It must be noted that when a short circuit occurred inside an appliance, such as a wireless set or cooker, the appliance itself was regarded as the source of ignition (see table) but when the fault was in the connecting lead to the appliance then the wire or cable was reported as the source of fire.

One of the more important supposed causes of fire in post-war temporary houses has been the failure of wire and cable, which was involved in 23 per cent of the incidents reported in 1947, the corresponding figure for 1946 being 16 per cent. In all these outbreaks the material first ignited was part of the structure of the house; fire spread subsequently to built-in cupboards, floor boards, walls, ceilings or rafters, in about one-half the number of incidents. In the remainder of the cases only the wiring, fuse box, distribution board, or jacket of the water heater, was involved.

In all tests conducted by this organization a particular need has been felt for a robust radiometer with a sufficiently quick response to be used when studying actual fires and for matching experimental conditions with them. A variety of "electronic" circuits incorporating resistors of very large negative temperature coefficient has been tried; considerable ultimate sensitivity has been obtained, but response time is too great for the purposes envisaged. Modifications of the resistors and of the feed-back circuits are now being tried to overcome the time lag.

Italians Charter C.S. "Monarch"

The Post Office C.S. *Monarch*, of 8,050 tons, the largest cable ship in the world, has recently been chartered for the company and for the Italian Government, by Italcable, Ltd., for cable laying and repair operations off Gibraltar and in the South Atlantic.

Unified Screw Threads

Limited Scope of New British Standard Specification

By L. H. A. CARR,*
M.Sc.Tech., M.I.E.E.

THERE exists much misunderstanding about the use and purpose of the British Standard Specification recently issued under the above title (B.S. 1580: 1949)† and it has been fostered both by the unfortunate nature of the terms used in the announcements issued to the Press and by the exaggerated, not to say untruthful, reports that have appeared in America.

The new thread, provisionally added to the list of British Standard threads, in no way affects the status of the Whitworth, B.S.F., British Association, or other standard threads at present in use. There is not the slightest basis for the suggestion that the use of the existing threads by British manufacturers as their primary standards will be in any way affected.

Assurance of Interchangeability

During the war, and occasionally in civil life, difficulty in interchangeability had arisen due to the difference between the threads used in America and Britain. It is in an endeavour to overcome this difficulty that the "unified screw thread system" has come into being and the much publicized "unification of screw threads" between the three countries (United States, Canada and ourselves) consists in nothing more than an agreement that a certain thread, mutually agreed upon, shall be known as the "unified thread" in all three countries, with the natural corollary that any such threads will be interchangeable irrespective of the country of manufacture.

The unified thread system at present does not include threads below $\frac{1}{4}$ in diameter. For that size and above, the unified system virtually consists of a "tidied-up" version of the standard American system, with the addition that the rounded top, preferred by British manufacturers, is allowed as well as the American truncated type. In general unified threads will fit American-threaded parts and *vice-versa*, but the awkward American 13-thread alternative for the $\frac{1}{2}$ in diameter has been excluded from the unified screw thread series, in favour of 12 threads per inch.

At the moment only the threads have been standardized; that is, first, the form of the thread and, secondly the number of threads, both coarse and fine, for bolts and nuts of standard diameters within the scope of the specification, but work is proceeding on the standardization of nuts and bolt heads.

It remains to be seen how far apparatus embodying the unified screw thread will be called for and to what extent its use will reach. At the present moment it would appear that there is not a single tool in the country designed for the production of this thread, so that insistence on its use will necessarily be accompanied by an increase both in delivery time and price.

Smaller Sizes not Affected

It will be noted that, as yet, there is no unified thread for sizes below $\frac{1}{4}$ in diameter. This matter is still under discussion between representatives of the three nations, but British manufacturers have made it clear that they are not prepared to accept any "unification" of these small threads other than on the lines of the B.A. thread.

The principal, and sole, result of the introduction of the new British Standard has been to enable a British purchaser to ensure that products obtained in this country and in America shall be interchangeable as regards screw threads, provided that in each case it is specified whether the fine or coarse thread is to be used, a necessity which is often overlooked.

It can, therefore, be argued that the same result would have been obtained at very much less cost, and with far less misunderstanding if the existing American Standards (which could be republished in

* Chairman of the B.E.A.M.A. Standardization Committee and consulting engineer to the Metropolitan-Vickers Electrical Co., Ltd.

† *Electrical Review*, 3rd Dec., 1948 (pp. 850 and 866); 3rd June, 1949 (p. 936); and 2nd Sept., 1949 (p. 430).

this country by the B.S.I.) were specified when such interchangeability was essential. At the same time it must be pointed out that under this scheme we should have no control over such specifications, which would remain American national property, whereas with the present joint unified thread specification, no modification can be introduced to which we are not a party.

Nevertheless, the matter still remains for final settlement. As has been stated, the specification has been issued as a provisional one only and it will come up for confirmation, or otherwise, at the end of six months. A serious responsibility rests on those who make this decision.

Will the value to those who require this interchangeability (and who can obtain it at any time by specifying American threads) be worth the expenditure of time and money, to say nothing of the confusion that will result if it is decided to retain this unified thread as an additional British Standard thread, presumably to be called for by a client whenever he fancies, in exactly the same way as he calls for any other British Standard?

A further point to be taken into consideration is that the introduction of this additional standard, which is merely an alternative, is flatly contrary to the expressed policy of the "Lemon" Committee set up by the Ministry of Supply, which rightly stresses the importance of limiting the varieties of a so-called standard product.

There is yet a third difficulty to be overcome. Great Britain (as are the United States and Canada) is a member of the International Standardization Organization (I.S.O.) of the United Nations and the question of an international standard thread is at the moment a very live one with them; naturally there is a considerable weight of opinion among the European nations that such a thread should have a metric basis. The present provisional Anglo-American agreement has been made entirely without reference to I.S.O. and it may prove to be unwise to proceed any further in this direction without raising the matter with the I.S.O.

Eastern Consultative Council

Latecomers' Avoidance of Line Rental

AT a meeting of the Eastern Electricity Consultative Council on 2nd September, the chairman (Alderman W. J. Bennett, J.P.) and the secretary (Mr. L. A. Jackson) were authorized to investigate thoroughly the statutory position brought to the Council's notice by a representation received from Mr. George Brown, of Bury St. Edmunds, who sought the Council's support for a reduction in the line rental charge which he pays in connection with the supply of electricity to his house.

Mr. Brown informed the Council that, together with a neighbour, he had applied for a supply of electricity. The neighbour withdrew when he found out the cost of the line, and Mr. Brown obtained a supply. After two years, the neighbour applied again and was connected without being required to pay any line rental.

The Eastern Electricity Board had informed Mr. Brown that, as the line passed within 50 yd of the house of the second applicant, it was obliged by statute to make a supply available, and it was not empowered to ask the consumer to share the line rental charge with Mr. Brown, although he would be given credit for a proportion of the revenue derived by the Board from the second consumer.

The chairman said that this state of affairs was so patently unfair that it would have to be remedied. It could happen in relation to all existing line rentals. He suggested that the Council should authorize him to investigate the matter very carefully. Captain N. E. Strutt said the same sort of thing had been happening to farmers for years and he asked for the most complete information before any action was taken.

In another case the Council also decided to ask for more information before coming to a decision. This concerned an application from Mr. F. Newell, of Little Cornard, Sudbury, Suffolk, for the Council's support of his complaint against the Electricity Board. The Board had insisted that Mr. Newell should comply with the clause in his agreement respecting the payment of the minimum guarantee. Mr. Newell's case was that, because of the appeals by the Minister of Fuel and Power to economize in the use of electricity, he had cut down his consumption and he objected to paying for electricity which he had not used because he was asked not to use it.

Correspondence

Letters should bear the writers' names and addresses, not necessarily for publication. Responsibility cannot be accepted for the opinions expressed by correspondents

Peak Load Control

MR. HOBBINS (26th August) appears to be one who supports the view that by installing some sort of restrictive device on domestic installations we shall go a long way towards reducing the peak load to manageable proportion in the immediate future if manufacturers will only co-operate in producing the required restrictive devices. I do not hold the same view and in fact I am of the opinion that it would be far too costly and would take too long to carry out proposals of this sort to effect any substantial relief of our present-day difficulties.

It may interest Mr. Hobbins to know that in my district we have the following saturation figures expressed as percentages: Cookers, 66; kettles, 61; water heaters, 58; washboilers, 40. With this connected load, plus a fairly heavy domestic heating load, the average demand on the station bus-bars was less than 1¼ kW per domestic consumer at the week-day peak and this peak load occurred at mid-day, which of course did not coincide with the time of peak load on the generating stations.

I would like to see Mr. Hobbins' proposals in detail and his estimate of the reduction in the peak load, the cost of his proposals and how long it would take to carry them out.

B. CROWSLEY, A.M.I.E.E.

Welwyn Garden City.

A Dangerous Injunction

NOTWITHSTANDING Mr. S. F. Philpotts' remarks, I still maintain that the injunction referred to is a dangerous one and am gratified to note that Mr. O. A. Tobin also appears to have a similar "bee in the bonnet" to mine. No reputable electrical engineer would connect an immerser to a two-pin plug in a bathroom, scullery or such place.

Would it not be much more satisfactory to have a label attached to the earth wire worded as follows: "Where this apparatus is used in apartments having earthed conductors such as conducting floors, water and gas pipes, etc., this wire must be efficiently connected to earth by means of a suitable plug or otherwise. If in doubt, consult a qualified electrician."

This would have no adverse effect on the sale of appliances and the manufacturers would have a clear conscience that they had done all they could be expected to do in the interests of safety.

Glasgow, ALEX MILNE, Senr.

Electrical Tradition

THE South Eastern Electricity Board is now using on the facias of its showrooms the word "Electricity" in Faraday's handwriting as it appears in his notes at the Royal Institution. His script was noted for its neatness and looks remarkably well when enlarged. In this way it is hoped to bring to the notice of the public

Example of Faraday's hand-writing used on S.E. Board showrooms

something of the history behind the great industry which owes so much to Faraday's genius and to keep alive a spirit of tradition in the minds of all the Board's employees.

A notice appears in all showrooms where the device is used calling attention to it and referring to Faraday's discovery of the principle of magnetic induction which laid the foundation of the present electricity supply system.

Cable Short Circuit Ratings

WHILE fairly obvious by reference to the text and tables, an error in the captions to some of the graphs in this article (12th August issue) needs to be explained. The curves on p. 289 indicate the three core (Fig. 2) and single core (Fig. 4) short circuit currents for 120 deg C respectively, while those on p. 290 refer to three core (Fig. 3) and single core (Fig. 5) short circuit currents at 250 deg C.

Personal and Social

NEWS OF MEN AND WOMEN OF THE INDUSTRY

FOR the first time at Birmingham Central Technical College a woman lecturer has been appointed in the electrical engineering department. She is **Miss B. Barwell,** who received her technical education at the College and served an apprenticeship at the Witton Works of the General Electric Co., Ltd., where for the past eighteen months she has been employed in the company's drawing office.

Mr. W. F. Simonson has been appointed technical officer to the Water-Tube Boilermakers' Association, and commenced his duties on 12th September. This appointment has been made in connection with the Association's desire to extend its research organization. Mr. Simonson has been on the staff of the Eastern Division of the British Electricity Authority as plant testing and efficiency engineer.

Mr. A. Friswell

Mr. H. V. Barter, of Newport, Mon, has been appointed director and chief executive officer of the Industrial Association of Wales and Monmouthshire. Mr. Barter has been to South America, where, in 1937, he became assistant to the vice-president of the associated companies of the Brazilian Traction, Light & Power Co.

The English Electric Co., Ltd., has announced the following three appointments to its Steam Turbine Division with effect from 1st September:—

Mr. A. Friswell has been appointed general manager. He was educated at Lincoln Technical College and subsequently served an indentured apprenticeship with Robey & Co., Ltd., at Lincoln. He joined the Rugby Works of the English Electric Co. in 1921, and after spending nine years in the shops, drawing offices and on the site erection staff on steam turbines and oil engines, he was attached to the Mechanical Sales Department. In 1932 he became the chief estimating engineer of the Diesel Engine Department, and was appointed assistant contracts manager to the company in April, 1943, associating himself largely with comprehensive steam turbine projects. Since 1944 Mr. Friswell has occupied the position of plant contracts manager, responsible for the handling of all contracts for generating plant, both steam and oil, and electrical equipment for industrial and other applications.

Mr. A. C. Hirst, B.Sc., M.I.Mech.E., M.I.E.E., M.Inst.F., has been appointed sales manager of the Steam Turbine Division in succession to **Mr. R. H. Howatt,** who has left the company's service to take another appointment. Mr. Hirst graduated

Mr. A. C. Hirst

Mr. M. H. Simpson

at Northampton Engineering College, London, and served a year's apprenticeship with the British Thomson-Houston Co., Rugby. After taking his degree he joined Brown, Boveri in Baden, Switzerland, where he stayed for nine years, subsequently joining the London office staff of British Brown, Boveri as mechanical engineer. This was followed by a year as fuel and efficiency engineer with the Appleby-Frodingham Steel Co., after which he joined the English Electric Co. in 1940 in the Turbine Department, Rugby. During the war he spent some time with the Royal Aircraft Establishment, Farnborough, on jet propulsion development. He has been elected chairman of the Rugby Sub-Centre of the I.E.E. for the coming session.

Mr. M. H. Simpson, D.L.C. (Hons.), B.Sc. (Lond.), A.M.I.Mech.E., A.M.I.E.E., becomes chief sales engineer, Steam Turbine Division, in succession to Mr. Hirst. Mr. Simpson has been with the English Electric Co., Turbine Department, since 1937.

Mr. J. Hammond, who has been in the service of Oldham & Sons, Ltd., for fifty years and has been secretary of the company for twenty-nine years, has retired from that position, although he remains a member of

Mr. J. Hammond

Mr. J. Flatley

the board to which he was appointed in 1946. He has been succeeded as secretary, as from 1st July last, by **Mr. J. Flatley,** F.C.I.S., assistant secretary.

Mr. E. G. Taylor, B.Sc. (Eng.), M.I.E.E., of the Manchester branch of the General Electric Co., Ltd., is one of a party of eleven engineers who are to study mechanical aids in factories and the use of power-operated hand tools in the United States. He is leaving for America on 22nd September.

On his retirement from the position of superintendent of the meter department of the South Western Electricity Board at Feeder Road, Bristol, **Mr. F. L. Thomas** was presented by his colleagues with a tray of tools on 2nd September.

Mr. D. Houston has been appointed technical manager and chief engineer of Hipprum Wires, Ltd., as from 1st September last. Mr. Houston was formerly with Pyrotenax, Ltd., for twelve years, and was for a period assistant production manager of that company's Widnes factory.

Mr. H. F. Knell, M.I.E.E., manager of the Kent Sub-Area of the South Eastern Electricity Board, has been appointed a County Justice of the Peace in the North Aylesford Petty Sessional Division.

Mr. J. Barlow, whose appointment as works manager of the new factory of African Lamps (Pty.), Ltd., of Johannesburg, South Africa, was announced recently, sailed with his wife in the *Durban Castle* from Southampton on 8th September. The factory in which he will carry out his new duties is one in which Ekco-Ensign Electric, Ltd., recently acquired a large manufacturing interest.

Mr. H. R. Johnson, Graduate I.E.E., formerly installation engineer in the St. Helens and Warrington districts of the Merseyside and North Wales Electricity Board, has been appointed district commercial officer for St. Helens. **Mr. Johnson,** who served during the last war in the R.A. and R.E.M.E. was industrial development assistant with the former St. Helens Corporation Electricity Department.

Mr. R. A. Hunt, general superintendent since 1938 of the Yallourn territory of the Victorian Electricity Commission, has been appointed chairman and general manager of the Commission.

Mr. Oswald Mingay, editor and publisher of the Australian *Radio Electrical Weekly*, has secured a flat at 10, Salisbury Avenue, Cheam, Surrey, where he and his wife will be until at least February next. They have just completed a 2,000-mile motor tour of northern England and Scotland. After "Radiolympia," Mr. and Mrs. Mingay will visit Holland, Belgium, France and Switzerland and be back in London on 31st October.

More than 500 workers from the Dagenite accumulator works of **Pritchett & Gold** recently went on their annual outing to Margate. They travelled in sixteen coaches from Barking Station and on arrival at Margate were entertained to lunch at the "Dreamland," where Mr. E. Honey, works manager, welcomed them on behalf of the company.

In our last issue we reported the appointment of Mr. R. W. Rand as manager of the Edinburgh branch of the Simplex Electric Co., Ltd. The company now informs us that this should have read **Mr. J. W. Brand,** who was formerly the company's senior representative of the Glasgow branch. We reproduce his portrait herewith.

Mr. J. W. Brand

Mr. H. Tweedale, A.C.A., has relinquished the position of divisional accountant of the B.E.A. North Western Division to take up special accounting duties in the Accountants' Department. **Mr. A. McLellan,** C.A., has succeeded him as divisional accountant.

The third annual cricket match between the West Yorkshire and the Huddersfield Branches of the **Electrical Contractors' Association** was played on the Elland Cricket Ground (near Halifax) on 7th September. Huddersfield batted first and scored 203. Tea was then served in the pavilion, and was attended by players, supporters, members, and their wives and

friends, numbering seventy. The West Yorkshire Branch then batted in a failing light and were all out for 65 runs. A collection made by Mr. J. F. Thomas (Huddersfield wholesaler and member of the West Yorkshire Area Committee of the E.I.B.A.) during the match realized £3.

Obituary

Mr. G. W. E. Hooper.—The English Electric Co., Ltd., announces the death at Stafford of Mr. G. W. E. Hooper, T.D., F.C.I.S., secretary of the company, which occurred on 3rd September. Mr. Hooper was born in 1889 at Highgate and educated there. He joined the staff of the works accountant at the company's Willans Works, Rugby, in 1920, and in 1926 was transferred to the London office as assistant to the chief accountant. He became assistant secretary in 1930 and secretary in 1933. In 1940 Mr. Hooper's headquarters were moved to Stafford. He was chairman of the trustees of the English Electric Co.'s various pension schemes. In 1947, he was appointed a member of the Council of the Chartered Institute of Secretaries. Throughout his life he took a great interest in the Territorial Army, joining the Artists Rifles in 1909 and later the 22nd Field Brigade, R.A., which which he saw much active service in the 1914-1918 war, being mentioned in dispatches, and retired in 1919 with the rank of major. He took an active part in training the Rugby Battery of the 68th Field Brigade, R.A., and on transferring to London, he joined the Hertfordshire Yeomanry, finally retiring in 1938. The funeral took place on 6th September at Penkridge, followed by cremation at Perry Barr, Birmingham.

The late Mr. G. W. E. Hooper

Mr. F. Jackson.—The death occurred suddenly on 2nd September while in Norwich on business of Mr. Frank Jackson, formerly engineer and manager of the East Dereham U.D.C. electricity undertaking and subsequent to nationalization senior executive officer (East Dereham), Eastern Electricity Board. He was forty-two.

Mr. T. A. Kingham.—The death occurred on 4th September at the age of fifty-eight of Mr. Thomas Alfred Kingham, borough electrical engineer of Kingston-upon-Thames from 1918 to 1936, when he took up a position with the Ministry of Supply.

Trades Union Congress

Questions Discussed at Bridlington

AMONG the matters raised during the Bridlington meeting of the Trades Union Congress at Bridlington last week were the workers' part in the management of nationalized industries, pensions for the manual workers in those industries and prices, wages and profits.

Mr. J. B. Figgins, of the National Union of Railwaymen, contended that the trade unions should have a half share in the management of nationalized services at all levels. Mr. C. S. Sparks (National Union of Bank Employees) submitted a resolution providing that trade union representation on the board of a nationalized industry should be appointed by the Union organizing that industry, a contention which Mr. L. Evans of the General Council, said was right against the Council's policy that representatives should not come from a particular union.

Mr. Arthur Horner (National Union of Mineworkers), moved a resolution which was remitted to the General Council, providing (a) for the establishment of a joint council representing the governing bodies of nationalized industries and the trade unions concerned to deal with affairs relating to the industries and (b) for the setting-up by the General Council of a committee including representatives of unions operating in the nationalized industries to encourage and promote activities by the unions and deal with any difficulties which might militate against the success of nationalized industries.

Although there was a good deal of opposition to the General Council's proposals that the policy of restraint in the matter of wage claims should be continued those proposals were approved. On behalf of the Electrical Trades Union Mr. W. C. Stevens (the secretary) moved a composite amendment to the General Council's motion. He said that the endeavour to reduce prices and profits had been ineffective. Wages could be improved out of profits without raising prices to the consumer. Mr. J. Tanner (Amalgamated Engineering Union) supported the Council's policy to which, he said, there was no alternative. Mr. Arthur Horner also took this line, pointing out that the policy did not exclude claims for improvement in the wages of the lower-paid workers.

The subject of pensions for manual

workers in nationalized industries was raised by Mr. F. Foulkes (president, Electrical Trades Union). He took exception to the Government's suggestion that the workers should wait for two years when the matter would be reviewed. Mr. Foulkes thought it possible that a pensions scheme could be established in the electricity supply industry and he asked the General Council to stand aside and let negotiations continue. An elaborate scheme had been worked out for 37,000 people in other grades of the industry. Already 50,000 manual workers had schemes inherited from the former undertakings but a similar number was without such provision. He said that if the Government's suggestion was followed those manual workers who already had pension rights would be expected to abandon them.

For the General Council, Mr. L. Evans said that it was wrong to say that the Government had decided to shelve the matter for two years; the matter was still under discussion with the Council. The matter had implications which were not confined to the nationalized industries. The conference approved the Council's report on the subject.

Power Engineers' Salaries

IT is reported in the *Electrical Power Engineer* for September that although agreement has been reached on some points, there are still a number of outstanding problems to be settled before the new National Joint Board agreement can be drawn up.

Among other things, it has been agreed that power stations, Sub-Areas and Districts shall be classified in one common schedule with dual headings of MW capacity and units sold. Areas, Divisions and headquarters staff will be classified in a separate schedule. With the creation of this essential frame, the Negotiating Committee has been able to turn to the actual salary figures to be written into that frame.

The Electrical Power Engineers' Association's proposals were met with counter-proposals from the Electricity Boards, which, says the *Electrical Power Engineer*, the Association's representatives were compelled to reject immediately.

In the meantime, difficulties have arisen with the British Electricity Authority and the Association of Managerial Electrical Executives (A.M.E.E.) regarding the line of demarcation between technical staffs whose salaries and conditions are to be regulated by the negotiating machinery to be set up for the "managerial grades" and those to whom the National Joint Board agreement will apply.

The Association contends that a decision on this point should precede the creation of negotiating machinery for the managerial grades, as until it is known which staff is involved it cannot be known which union or unions are representative of such staff and therefore entitled to form the staff side of the negotiating machinery.

As it is probable that the E.P.E.A. membership in the managerial technical staff will exceed that of any other organization, the Association has claimed seats on the staff side of the negotiating machinery proportional to the number of its members whose conditions are to be regulated by that body. Members of managerial status are warned by the general secretary not to join the A.M.E.E. under the impression that this will be the only organization able to act for them.

Steam Pipe Cracking

THE investigations of the Committee appointed by the former Central Electricity Board in 1947 to determine the cause of the cracking of steam pipe systems in power stations have reached a stage at which the issue of a report (published by the B.E.A. on behalf of the Committee) has been deemed desirable.

The Committee is representative of power plant operators, manufacturers, engineering insurance companies and the Department of Scientific and Industrial Research. Soon after the first meeting the supply industry as a whole was asked to take certain precautions, and collaboration has since proceeded under the guidance of the Committee.

These fractures are caused by water, usually condensed steam, coming into contact with hot metal. Resulting differences of temperature create large stresses, the frequent occurrence of which causes fatigue and corrosion, which appear to act simultaneously and are able to accelerate each other, resulting in cracking. The latter can proceed so far before discovery as to render repair very costly, or even impossible.

Such cracking is not easy to detect by visual examination; indeed, special courses of instruction had to be provided to enable inspection to proceed on the scale required for the Committee to make a detailed analysis, based on makers' records, of sections of installed plant likely to be attacked in the manner expected.

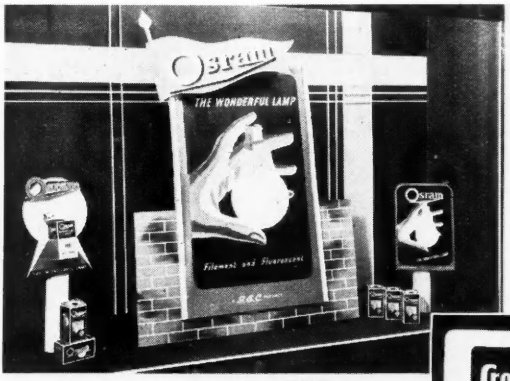
The report explains how the cracks develop, indicates the positions at which they may be expected, makes observations on their detection, offers precautionary advice to station operators and makes recommendations for the guidance of designers who lay out and arrange pipe lines, steam receivers and their connections.

Lamp Publicity

Material for the Lighting Season

WITH the relaxation of lighting restrictions electrical dealers will have greater scope for window displays this winter and electric lamp manufacturers have prepared some attractive material to assist them. We give below particulars of the first examples which we have received.

The GENERAL ELECTRIC CO., LTD., has



Above: G. E. C. centre piece

Below: Siemens "Barrister" display-piece

two new centre-pieces designed for use in "Osram" window displays. The novel and striking design for medium and large windows, shown in the accompanying illustration, consists of a coloured linen screen topped by a pennant, and displayed in front of a hardwood backboard representing a wall. The screen has a blue border and a black centre, on which the hand and lamp device appears in natural colours. The pennant is blue, with the word "Osram" in yellow. Used in conjunction with the small cardboard cut-outs and display cards already available, a variety of attractive window dressings is possible.

The other centre-piece is in cardboard, and is intended for small windows. It is carried out in bright shades of blue, yellow and red, and has a cut-out portion which can be opened out to form a solid carton.

The publicity plans of CROMPTON PARKINSON, LTD., include an extensive campaign in the national and provincial morning, evening and Sunday papers and in the periodical Press. New display material for Crompton lamp publicity includes an attractive full-coloured cut-out in two planes measuring 49½ in

Crompton Parkinson cut-out

wide by 28½ in high. This display consists of a vertical bright yellow frame, with a name panel in the top left-hand corner, enclosing a background printed in shades of blue on a different plane, with attached cut-out reproductions of fluorescent and tungsten lamps. These stand in relief of the background and protrude through the frame. With this display an impressive shadow effect can be

obtained if the window lighting is arranged from the floor level. A smaller full-coloured display card featuring Crompton coiled-coil lamps is also available. This is in two planes and measures 14½ in high and 10 in wide. As in previous years a window dressing service will be provided. New literature available comprises leaflets dealing with a range of automobile lamps, a special folder for Crompton lamp stockists for distribution to customers and a 20-page catalogue.

Last year's lamp display piece issued by SIEMENS ELECTRIC LAMPS & SUPPLIES, LTD., depicting a barrister holding up a Siemens lamp, proved most popular and for the coming season it has been matched by a lady barrister. The caption "Evidence of good lighting" has been retained. This is being supported by a 20 in by 15 in showcard (a new treatment of the "Big Ben" idea), small counter cut-outs, and Press advertising.

The company has also designed a large battery display piece which bears last year's caption "You hear every note" and has a striking picture of the band of the Royal Horse Guards. In addition there are a very tasteful 20 in by 15 in showcard and small counter cutouts and a comprehensive advertising programme is to be carried out in provincial weekly newspapers.

E.I.B.A. Notes

THE Electrical Industries Ball, in aid of the Electrical Industries Benevolent Association, is again being held on the second Friday in November (11th) at Grosvenor House, London, W.1. Cyril Stapleton's Orchestra has been engaged, and the cabaret consists of Ann Ziegler and Webster Booth, the Kermond Brothers and Michael Bentine. Tickets are £2 each, and the Association will be sending out further details later.

The E.I.B.A. is £2,117 down on its income "target" for the first eight months of 1949, only £19,883 having been received as against the figure of £22,000 aimed at. Amounts of £50 and over included in the August income were as follows: Hackbridge and Hewitt Electric Co., Ltd., £50; Ferranti, Ltd., £300; B.E.A.M.A., £200 (special additional donation); Crompton Parkinson, Ltd., £500 (special additional subscription, making £750 for the year, to mark the appointment of Mr. E. C. Holroyde, vice-chairman of the company, as president of E.I.B.A.); E.P.E.A., £250; E.I.B.A., Leicester Branch, £114 (Branch luncheon).

The Manchester and District Area final of the E.I.B.A. National Golf Competition was held at the Hesketh Golf Club, Southport, on 7th September. As a result of the excellent weather, scoring was very good, and the trophy, presented for annual competition by Sir Vincent de Ferranti, was won by Mr. L. Wells (Ormskirk) with a score of 83, less handicap 12, making a net 71. Chief honours of the day went to the chairman of the district committee, Mr. G. F. Sills (English Electric). His score of 80 gross, less handicap 7, 73 net, was runner-up for the cup, which was a magnificent return for a man who, on his own admission later, had already received his post-war credit. Mr. Sills also won the putting competition and a raffle for golf balls. The best scratch score was made by Mr. E. C. Capp (Southport), with 77. In the afternoon a four-ball competition against bogey was carried through, the winners being Messrs. E. Berry and C. Rimmer, with a score of 6 up.

The East Midland Area Competition, played over the Beeston Fields course, near Nottingham, on 9th September, was won by Mr. J. Kerr (Stanton-on-the-Wolds) with a net score of 69, and he thus became the second winner of the Baldwin Trophy. Mr. J. N. Robertson, chairman of the competition organizing committee, made the presentation. Messrs. J. Kerr, A. E. Parkes, F. Overstall, W. A. Hastings and E. B. Driver, who returned the best scores, qualify for the all-England finals at Moor Park on 3rd October.

Next Week's Events

Monday, 19th September

BIRMINGHAM.—Grand Hotel, 6.15 p.m. Birmingham Electric Club. Presidential address by J. Ashmore.

LONDON.—At the Royal Society of Arts, W.C.2, 6.45 p.m. Institution of Works Managers (London Branch). Annual general meeting. Film "Mechanical Handling."

St. Ermins Hotel, S.W.1, 6.50 p.m. A.S.E.E. Central London branch. "Private Generation of Electricity versus Purchase from Public Supply," by T. P. Wakeford.

Thursday, 22nd September

LONDON.—London School of Hygiene and Tropical Medicine, W.C.1, 6.30 p.m. British Institution of Radio Engineers. Annual general meeting followed by an address by C. O. Stanley.

Savoy Place, W.C.2, 6 p.m. I.E.E. Education Discussion Circle. "The Teaching of Electrical Engineering in France — a Geometrical Approach," by Dr. G. Nassé.

SOUTHAMPTON.—Stoneham Golf Club. Institution of Electrical Engineers, Southern Centre. Benevolent Fund Golf Competition.

Friday, 23rd September

LONDON.—Women's Engineering Society. Annual Conference. (Continued until 25th September.)

Saturday, 24th September

LONDON.—Connaught Rooms, W.C.2, 5 for 5.30 p.m. Electrical Power Engineers' Association (S.E. Division). Annual dinner.

Competing Abroad

Adaptability to Different Requirements

By A. UNSWORTH, A.M.I.E.E.

IN these days of keener competition from pre-war competitors such as Japan, Germany, Italy and Czecho-Slovakia, no opportunity should be lost by the electrical industry to seeking to understand the problems and special difficulties of overseas buyers. There are unfortunately still too many people who cannot realize that the post-war sellers' market no longer exists, and who imagine somewhat optimistically that high prices and long delivery periods are still acceptable to foreign buyers provided the goods offered are of British origin.

To-day so many external factors enter into any particular overseas business transaction, that failure to grasp some of the essential differences between the overseas customers' requirements and those normally accepted in this country may easily lose us an important order, and possibly much-needed dollars.

The import licensing system set up by many countries including our own is, of course, one of the external factors mentioned above which is usually considered to be outside the manufacturers' control. While this is true, in certain cases greater consideration should be given to the granting of credits in the form of stocks on consignment and sometimes to the establishment of assembly factories abroad employing nationals of the country concerned.

Buyers Short of Sterling

One of the biggest hindrances at the present time to trade with certain overseas buyers is their lack of sterling. This is a further external factor beyond the control of the export manufacturers and closely bound up with the question of import permits. It is a fact that business is lost to us on this account and goes to countries, such as the United States, who are prepared to make their currency available in the form of long-term credits. In our own case, our Government has recently concluded an agreement with India and Pakistan whereby sterling is made available to these countries, and it is hoped that this will at least enable us to maintain our export business, although the whole question of unrequited exports is one which is at present receiving greater study.

Import duties on electrical goods exist in most countries to a varying degree and these affect the ultimate price to the consumer. The abolition of these duties should be the aim of all countries seeking economic co-operation and it is possible that some agreement may shortly be reached on this important matter. Certainly where an industry is well established and founded on a right and efficient basis it should not be afraid to meet foreign competition.

So much for the factors operating outside the manufacturers' control; let us now see to what extent we can control some of the features entering into export business.

Foreign Specifications

Every country in Europe has its own electrical regulations and specifications which have been drafted by the competent authorities. In this country we invariably work to British Standard Specifications which cover a multitude of diverse branches of the electrical industry. Similarly in Belgium the rules of the C.E.B. (Comité Electrotechnique Belge) are in force; in France those of the U.S.E. (Union Techniques des Syndicats d'Electricité), and in Germany those of the V.D.E. (Verband Deutscher Elektrotechniker). The B.S.S. is usually considered to be the most onerous of these specifications and, therefore, if the overseas buyer is well acquainted with the differences existing between these specifications, he will fully understand why he should pay the "little extra" in price for the British product. On the other hand, if he is just an ordinary buyer he will in all probability choose the cheaper article which in any event meets the requirements of his own country's specification.

It is, therefore, essential that from the

design aspect manufacturers should be fully aware of the competition to be met, and, if possible, should quote alternatives based on specifications other than B.S.S. To take one simple example: protected ventilated motors to B.S.S. 168 have a permissible temperature rise of 40 deg C by thermometer, whereas the C.E.B. and V.D.E. regulations specify 50 deg C by thermometer.

For a given horse-power output the British motor will have more liberal dimensions and possibly higher efficiencies. The larger dimensions are, however, not always an advantage, especially where a foreign manufacturer wishes to replace a motor of Continental design. Also he may not be greatly influenced by the lower temperaure rise and cooler running obtained. This same problem is met in slightly different form in the manufacture of other electrical products such as generators, alternators and transformers.

It would take too long to describe in detail all the divergences which occur, but it should suffice to say that if we are to compete successfully in international trade with the existence of a buyers' market, we shall have to give much closer study to many of the problems with which we are confronted. As one whose work deals with many quotations and tenders received from British and Continental manufacturers for equipment required for export, I may say that while on the whole British manufacturers are adaptable to customers' needs, there are some who still treat an export inquiry as they would one received from a local firm of contractors and quote prices excluding packing for shipment or even delivery f.o.b. Such an attitude of mind is hard to conceive and does not encourage repeat inquiries. Many still will not take the little extra time and trouble required to quote c.i.f. the port of destination. If they only realized it, the lack of this information frequently forces the buyer to place his order with a supplier who does quote him a delivered price.

Finally, as to the British system of weights and measures. This is utterly incomprehensible to the Continental customer, and we cannot get rid of our antiquated system too soon when considering export business with European countries or such countries as Argentina and Brazil, where the metric system has long been established.

The Canadian Market

Plans for Specialist Representation

REPRESENTATIVE office-bearers from thirty engineering trade associations met in London last week at a meeting organized by the British Engineers' Association to hear an outline of a proposal by Sir Harry Gilpin resulting from the United Kingdom Mission to Canada.

Sir Harry said that the Mission had reported that there existed in Canada a solid and expanding market for much United Kingdom engineering equipment. Last year we bought from Canada £216 million worth of goods and produce, while our sales to Canada came to £69 million. In 1948 Canada imported capital equipment valued at £109 million, but only £7 million worth came from this country. He was convinced that we could get a much greater share of the market. Our quality, prices, delivery and servicing must all measure up to those of our competitors.

The bulk of British exporting of capital equipment was done by a multitude of small firms, none of which could, by itself, embark upon a Canadian Odyssey. The Commission had therefore prepared a plan to co-ordinate representation of sections of the engineering industry.

Among the steps to be taken were the sending out of specialist representatives by the appropriate sections of the engineering industry to represent them in Canada for a period of, at least, two years. These men would explore the possible openings, "screen" potential agents, discuss long-term needs of users, sum up the chances of group selling organizations and so on. The cost of each representative was estimated to be between £5,000 and £6,000 per annum. If any section of the industry found it impossible to obtain sufficient financial support from its members to cover the whole of the cost involved, the Government had agreed to provide facilities to finance up to 75 per cent of the amount required, on the understanding that the advances so provided were repaid by a levy on the additional business that resulted. These facilities would cover the initial period of two years.

The specialist representatives' reports

would be sent to their trade associations and would be forwarded to the subscribing members. Two central organizations would be needed. One in Toronto for receiving reports and for co-ordinating the work of the specialist representatives, and the other in London, the work of which was detailed in a blue paper circulated by the British Engineers' Association, 32, Regent Street, S.W.1. For its orderly functioning, they proposed to set up a non-profit-making limited company without share capital.

I.E.E. Programme

LONDON MEETINGS DURING FIRST HALF OF SESSION

ON 6th October, Professor E. B. Moullin (the President) opens the London Session of the Institution of Electrical Engineers when he will deliver his inaugural address. The arrangements for the first half of the 1949-50 session are given below:—

Ordinary Meetings

Thursday, 3rd November: "Electrical Weighing" (Measurements Section paper), by Dr. H. I. Andrews. Thursday, 1st December: Lecture on "The Medical and Psychological Aspects of Electric Shock, and some of the Nervous Complications," by Dr. Macdonald Critchley. Thursday, 12th January: "Radar Echoes from Precipitation" (Radio Section Paper), by Messrs. J. E. N. Hooper and A. A. Kippax. Wednesday, 18th January: Faraday Lecture on "Radar," by Dr. R. A. Smith.

Measurements Section

Professor J. Greig will give his inaugural address as chairman of the Measurements Section on 11th October, and the subsequent meetings are as follows: Tuesday, 1st November: "Recent Developments in Comparative Methods of Testing a.c. Electricity Meters," by Messrs. S. F. Musson and R. E. Mell. Monday and Tuesday, 7th and 8th November: Symposium of papers on "Ferromagnetic Materials." Tuesday, 22nd November: Discussion on "The Electrical Measurement of Strain," to be opened by Dr. F. Aughtie. Tuesday, 13th December: "A Simplified Method for Checking the Orientation of the Optic Axis of Meter Jewels," by Mr. S. F. Knight. Tuesday, 17th January: "Factors Influencing the Design of a Rubber Model," by Mr. G. B. Walker. Other demonstrations of apparatus for solving the Laplace equation by Messrs. E. Colin Cherry and E. E. Hutchings (joint meeting with the Radio Section). Tuesday, 31st January: Discussion on "Metering of Welding Loads," to be opened by Mr. G. F. Shotter.

Radio Section

The chairman's inaugural address to the Radio Section will be given by Mr. R. T. B. Wynn on 19th October. Other meetings are as follows: Monday, 31st October: Lecture on "The C.B.S. Colour Television System in the United States," by Dr. P. C. Goldmark. Wednesday, 16th November: "Some Considerations in the Design of Negative-Feedback Amplifiers," by W. T. Duerdoth. Monday, 28th November: Discussion on "Achievement of Reliability in Radio Equipment," to be opened by Dr. G. W. Sutton and Mr. F. E. McGinnety. Wednesday, 7th December: "Solar Radio-Frequency Radiation," by Dr. J. L. Pawsey (paper to be read by Mr. J. S. Hey). Monday, 19th December: Informal lecture on "The Acoustics of Studios and Auditoria," by Mr. W. Allen. Wednesday, 11th January: "The Relative Merits of Presentation of Bearings by Aural-Null and Twin-Channel Cathode-Ray Direction-Finders," by Messrs. S. de Walden and J. C. Swallow. "Some Experiments on the Accuracy of Bearings taken on an Aural-Null Direction-Finder," by Mr. F. Horner. Tuesday, 17th January: "Factors Influencing the Design of a Rubber Model," by Mr. G. B. Walker. Other demonstrations of apparatus for solving the Laplace equation by Messrs. E. Colin Cherry and E. E. Hutchings (joint meeting with the Measurements Section). Monday, 23rd January: Discussion on "Electronic Components—Government and Industrial Relations and Co-operation; Commercial, Professional and Service Standards," to be opened by Dr. D. H. Black and Mr. N. F. S. Hecht.

Supply Section

Mr. J. W. Leach (chairman) will deliver his inaugural address to the Supply Section on 26th October. Subsequent meetings are: Wednesday, 23rd November: "The Phase/Neutral System of Supply for Rural h.v. Distribution," by Messrs. G. T. Garwood and G. J. Websdale. Wednesday, 14th December: "The Performance of the British Grid System in Thunderstorms," by Dr. J. S. Forrest. Wednesday, 25th January: "The Design, Specification and Performance of High-Voltage Surge Diverters," by Messrs. H. F. Jones and C. J. O. Garrard.

Utilization Section

This section opens with the chairman's inaugural address by Mr. C. T. Melling on 13th October, and later meetings are: Thursday, 10th November: "Electricity in the Cotton Industry," by Messrs. F. W. Cox and W. E. Swale Friday, 25th November: Section Conversazione. Thursday, 8th December: "Technical Considerations Affecting the Development and Design of Electrical Control Gear for Machine Tools," by Mr. A. R. H. Thorne. Thursday, 5th January: "Some Problems in Aircraft Magneto Development," by Messrs. R. T. Coe and D. F. Welch.

Informal Meetings

Monday, 24th October: Discussion on "Should Research in Electrical Engineering be pursued mainly in Research Departments in Industry, or should it be transferred to Special Establishments?" to be opened by the Presi-

dent. Monday, 21st November: Discussion on "Discussions," to be opened by Mr. C. O. Boyse. Monday, 16th January: Discussion on "Secondary Cells," to be opened by Mr. C. P. Lockton.

Education Discussion Circle Meetings

Thursday, 22nd September: "The Teaching of Electrical Engineering in France—a Geometrical Approach," by Dr. G. Nassé. Friday, 14th October: Discussion on "The Application of Psychological and other Tests to the Selection of Students for Courses and to Vocational Guidance," to be opened by Mr. D. Smith. Tuesday, 29th November: Discussion on "The Electron Theory Approach to Electromagnetism," to be opened by Professor J. Thompson. Tuesday, 10th January: Discussion on "The Organization of Laboratory Work," to be opened by Mr. J. G. Fleming.

Lighting for Aircraft Assembly

HOME OF THE "BRABAZON I"

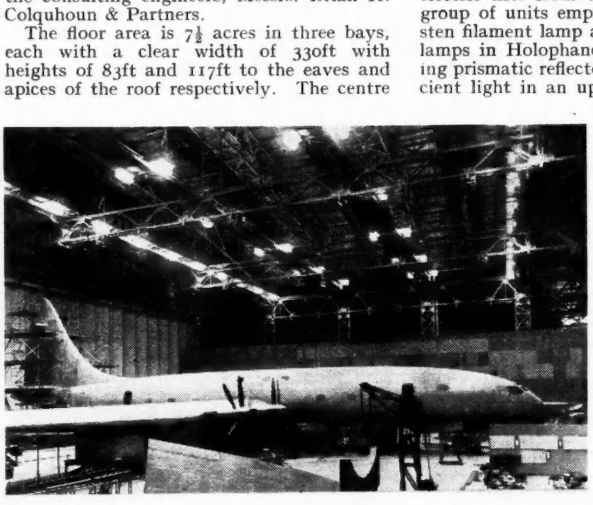
THE artificial lighting of the aircraft assembly hall of the Bristol Aeroplane Co.'s Filton establishment, the home of the "Brabazon I," necessitated the development of special lighting equipment, the design and application of which has been undertaken by the Holophane Co., Ltd., in collaboration with the chief electrical engineer of the Bristol Aeroplane Co., and the consulting engineers, Messrs. Brian H. Colquhoun & Partners.

The floor area is 7½ acres in three bays, each with a clear width of 330ft with heights of 83ft and 117ft to the eaves and apices of the roof respectively. The centre bay, employed for detail erecting, has an overall depth of 420ft, and each side bay has a depth of 270ft, one bay being devoted to final assembly and the other for servicing.

A high standard of visual efficiency with pleasing environment simulating daylight conditions were primary considerations. The unusual mounting height, 75ft above the floor, facilitated the use of high-efficiency lamps without risk of glare and a blended lighting scheme embodying a combination of 1,500 W tungsten filament lamps and 400 W mercury vapour lamps was finally decided upon. The superstructure of the plane reaches a height of 50ft above ground level.

The lighting units are arranged in groups of three mounted over apertures in platforms in the catwalk layout. Maintenance and re-lamping of the reflector units can be effected conveniently and safely on the catwalks, access to which can be gained by electric lifts from the ground level. Each group of units employs one 1,500 W tungsten filament lamp and two 400 W mercury lamps in Holophane translucent concentrating prismatic reflectors which permit of sufficient light in an upward direction for adequate illumination of the roof structure and walkways without prejudice to the output efficiency in the lower zone.

The lighting fitting groups are arranged in rows 50ft apart with a spacing of 16ft in the centre erecting bay, to provide a service illumination of 25 lumens per sq ft, and 20ft in the side bays, where an illumination of 20 lumens per sq ft is maintained. The complete installation comprises 428 main lighting groups, each with 2,300 W loading; with the subsidiary lighting the total lighting load is about 1,175 kW.



Holophane lighting in the Filton assembly hall

Holophane equipment is also used in the lighting of the offices and ancillary buildings as well as for the contact lights recessed in two rows about 150ft apart along the Filton runway. These contact units, which have to withstand the impact of landing aircraft, embody an accurate optical system designed to project a closely defined beam in a zone 3 to 5 deg above the horizontal.

Commerce and Industry

Modification of Lighting Restrictions
Mobile Service Units

THE restrictions on the use of electricity for the purposes of advertisement (including shop-window lighting) under the Electric Lighting (Restriction) Order, 1949, have been modified by the grant of a general licence (the Electric Lighting (Restriction) General Licence, 1949), which will confine the operation of the restrictions to the periods from 7 a.m. to 1 p.m. from Mondays to Fridays from 3rd to 28th October. Under the parent order it was provided that the restrictions should apply on weekdays from 7 a.m. to 7 p.m., and these hours will now apply after 28th October.

The effect of the modification is that the restricted periods are now: Mondays to Fridays from 3rd to 28th October, 7 a.m. to 1 p.m.; Mondays to Fridays from 29th October to 2nd April, 7 a.m. to 7 p.m. There are no restrictions on Saturdays or Sundays.

Within the restricted periods electricity taken from the public supply may not be used for purposes of display or advertisement lighting because of the difficulty in meeting the peak load. There will, however, be no restrictions outside these times. The restrictions on the use of electricity generated by private supply were completely removed on 2nd April.

Restrictions on the standard of interior lighting permitted in shops, hotels and catering establishments will also be subject to the alteration of hours as stated.

Falk, Stadelmann's Showrooms

When Falk, Stadelmann & Co., Ltd., first opened their premises at 20-22, Mount Street, London, W.1, in February last year, the setting up of lighting fittings showrooms in the heart of Mayfair was considered something of a venture. The results which have been obtained during the past eighteen months, however, have exceeded expectations. When we first visited the showrooms only the ground floor had been completed. Plans had been prepared for the conversion of the lower ground floor into lighting showrooms, but the company was still awaiting the necessary licences. These were eventually obtained and the work has now been completed, the showrooms now displaying an extensive range of lighting fittings designed to suit wide tastes.

One of the lighting sections of Falk, Stadelmann's showroom extension

Last week we had an opportunity of seeing what has been done. Mr. W. C. Jeary, sales manager of Falk, Stadelmann & Co., who has been responsible for the establishment of the showrooms, has shown much ingenuity, and by the judicious use of wall partitions—which incidentally have been used to conceal a considerable amount of unsightly pipework—the lower ground floor has been divided into seven rooms, each showing a different class of fitting. Visitors, on descending to this floor, enter a small hall and are faced with a stage-effect garden, with crazy pavement and ornamental figures, illuminated by colour-changing lighting—an inviting effect. The various rooms contain lighting fittings designed for both period and modern interior decoration, and include Jacobean and Tudor fittings, wood fittings, fittings for modern flats, "Perspex" fittings, bowls and glass-

ware shades. One room has a full range of commercial lighting fittings, while another is devoted to fluorescent lighting and includes examples of this form of illumination for industrial and commercial premises, hospitals and schools.

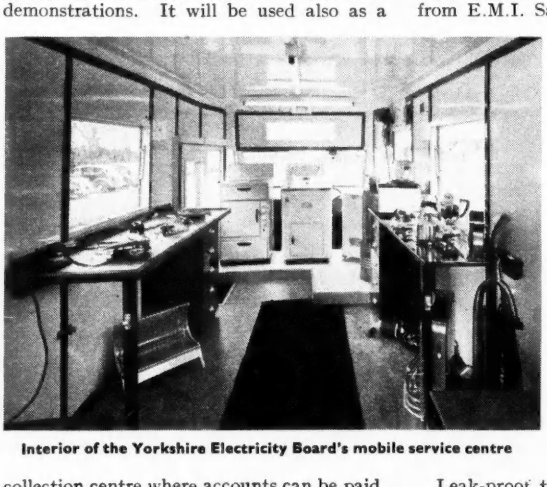
Although the showrooms are primarily for the display of lighting fittings, the company is showing a selection of its domestic appliances, among these being "Clean Line" electric kettles, "Auto-Perc" coffee percolators and thermostatically controlled irons. There are also refrigerators and drying cabinets. A wholesale trade counter and warehouse adjoins the company's showrooms.

Manchester Television Training School

Following the opening of television training schools in Birmingham and Leicester for the benefit of its approved radio dealers, the General Electric Co., Ltd., has now opened a similar school in the Manchester area for dealers from the Manchester, Sheffield and Liverpool areas.

Mobile Service Centres

The Yorkshire Electricity Board has recently put into service the first of a fleet of at least seven mobile service centres. The unit is designed chiefly for use in rural areas and, in addition to being a travelling showroom, has facilities for film shows and demonstrations. It will be used also as a collection centre where accounts can be paid. Minor repairs and adjustments to the smaller electrical appliances can also be undertaken.



Interior of the Yorkshire Electricity Board's mobile service centre

Since being commissioned the initial unit has made an extensive tour of Sub-Area No. 5 (Wakefield), paying visits to villages at present without a supply and now included in the first year of the Board's rural development plan, as well as visits to villages already supplied. Next month the unit will commence a tour of North Lincolnshire in Sub-Area No. 7 (Grimsby) and later a tour of the Yorkshire Dales in Sub-Area No. 1 (Bradford).

It is hoped shortly that there will be one of these mobile service units allocated to each Sub-Area.

Industrial Research

The first residential conference for directors and managers of industrial research in this country, organized by the Federation of British Industries, was held at Ashbourne Hill, Leamington Spa, from 11th to 14th March last. A report of the proceedings has now been published in book form, copies of which can be obtained from the Industrial Research Secretariat of the F.B.I., at 21, Tothill Street, London, S.W.1 (price 2s 6d).

Magnetic Recording

A technical paper entitled "Some Fundamentals of Magnetic Recording," by E. W. Berth-Jones, B.Sc., based on a lecture which was recently delivered by the author before the British Sound Recording Association, is now available in booklet form from E.M.I. Sales & Service, Ltd., Hayes, Middlesex. This booklet, which is well illustrated and printed on art paper with a semi-stiff cover, is available from the Advertising Division of the company, price 2s 6d.

Welsh Industries Fair

There was not a strong electrical representation at this year's Welsh Industries Fair. Among the trade exhibitors were Thorn Electrical Industries, Ltd., and Alpha Accessories, Ltd. Thorn's showed examples of their Atlas fluorescent lamps and fittings, including a dimming control for theatre lighting. Another exhibit was the Mary Ann mixer, a feature of which is governor control of speed.

Leak-proof torch batteries formed one of the principal items on the Alpha stand.

Illumination Design Courses

A number of Illumination Design Courses have been arranged by the

E.L.M.A. Lighting Service Bureau during the autumn in various parts of the country, and include the following: Queen's Hall Café, Darlington: 20th September to 18th October. Cleethorpes: 21st September to 26th October. Birmingham: 27th to 30th September. Royal Hotel, Southampton: 4th October to 1st November. London: 3rd October to 7th November. Grand Hotel, Bristol: 6th October to 3rd November. Engineers' Club, Manchester: 12th to 27th October. Liverpool: 13th to 26th October. Swansea: 1st to 22nd November.

In addition, five special lectures on illumination will be given during the winter, the first of which was to be held yesterday (Thursday) at New House, Newcastle-on-Tyne.

Mr. J. R. W. Rae (district commercial officer), Mr. H. H. Mullens (chairman North Eastern Electricity Board), and Mr. E. C. Lennox (manager Wear Sub-Area) inspecting equipment at the Durham Show

Token Exports to France

The French authorities have agreed a scheme of token imports from the United Kingdom during the year ending 30th June, 1950, similar to the scheme arranged for 1948-49. The list of articles to which the scheme applies includes wireless components and small electrical materials such as switches.

Durham County Show

The North Eastern Electricity Board (Wear Sub-Area) stand at the Durham County Press and Houghall Show, which was held from 1st to 3rd September, occupied a site measuring 130ft by 60ft situated to the left of the main entrance. In addition to an extensive display of cookers and agricultural equipment, two marquees were provided. In the larger marquee, a full range of the latest types of domestic equipment was exhibited. A further section was devoted to canteen and hotel equipment. This marquee also contained an E.D.A. information bureau and an Aerovap stand displaying the latest application of this specialized process for agricultural, horticultural and domestic use. Amongst the equipment in the agricultural and horticultural section were milk coolers, dairy sterilizers, milking machines and hedge cutters, also a range of pumps for farm and general use, and electrical equipment for the farm workshop.

The smaller marquee was confined to cookery demonstrations in a marquee taken by the Ministry of Food. Wear Sub-Area demonstrators co-operated in giving further electric cookery demonstrations.

In addition there were other stands, exhibiting electrical equipment for agricultural, horticultural and domestic use.

Devon Industries Fair

There is a large electrical section at the Devon Industries Fair, which was formally opened at Exeter by Major-Gen. W. G. Michelmore, Mayor of Exeter, on 7th September. The exhibits include a comprehensive display of electrical appliances and other electrical features are a television theatre and special lighting effects, including an illuminated waterfall. The electrical installation for the Fair has been carried out by the staffs of the Exeter and District branch of the Electrical Contractors' Association, and the members of the branch have co-operated in presenting a large stand showing lighting and electrical appliances. The South Western Electricity Board has also played a prominent part in providing the electrical services.

British Transport Exhibition

Appropriately, following the issue of the first annual report of the British Transport Commission last week, an exhibition show-

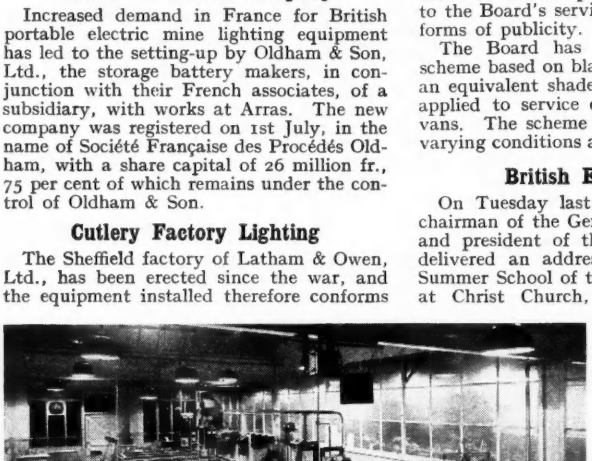
ing how the transport services have come under unified control, and how British Transport is constantly improving the various services, was opened on Friday last by Mr. Alfred Barnes, Minister of Transport, in the booking hall of Charing Cross Underground Station. The exhibition shows that during the last 300 years public transport services in Great Britain have been steadily grouping themselves into larger and more efficient units. A series of animated maps indicates some of the stages of development in the history of the railways. Another section of the exhibition gives examples of how services were constantly being improved during 1948. There are also a number of illuminated panels which ask a number of questions to which visitors can obtain the answers by pulling a lever. The exhibition, to which admission is free, remains open until 9th October.

Oldham's French Company

Increased demand in France for British portable electric mine lighting equipment has led to the setting-up by Oldham & Son, Ltd., the storage battery makers, in conjunction with their French associates, of a subsidiary, with works at Arras. The new company was registered on 1st July, in the name of Société Française des Procédés Oldham, with a share capital of 26 million fr., 75 per cent of which remains under the control of Oldham & Son.

Cutlery Factory Lighting

The Sheffield factory of Latham & Owen, Ltd., has been erected since the war, and the equipment installed therefore conforms with modern practice. In the plating shop the lighting fittings are required to withstand the humid or corrosive atmosphere, and for this purpose deep dome porcelain well glass units, specially designed by the Benjamin Electric, Ltd., have been installed. The reflectors are finished in "Crysteel" vitreous enamel, and are removable without disturbing the well glass or lamps. The electrical contractor was Mr. H. C. Freeman, of Sheffield.



Benjamin lighting fittings in a cutlery plating shop

South-Western Board Device

A distinctive "mark" has been adopted by the South Western Electricity Board,

Standard S.W. Board Device

South Western ELECTRICITY

and it is hoped that it will become the recognized symbol of electricity service in the area. As soon as possible it is to be applied to the Board's service centres, vans and all forms of publicity.

The Board has also adopted a colour scheme based on black, green and silver (or an equivalent shade) and this, too, will be applied to service centre frontages and to vans. The scheme will be adapted to suit varying conditions and circumstances.

British Export Policy

On Tuesday last Mr. L. Gamage, vice-chairman of the General Electric Co., Ltd., and president of the Institute of Export, delivered an address at the International Summer School of the Institute of Bankers, at Christ Church, Oxford, on "British Export Policy and Practice." In the course of his address Mr. Gamage gave an historical survey of the development of our export trade from the Tudor period to the present day. He said that our export policy was introduced for the first time after the last war, whereas it should have been formulated in the inter-war years. In concept it was restrictive, and he indicated how it should be extended to embrace a world diplomacy insofar as its external contracts were concerned. He also advocated a radical change on the home front to encourage rather than frus-

trate industry. Mr. Gamage urged the need for some system of multilateral trading between the nations and suggested a method by which such a system might be achieved. He also outlined the important aids to export which manufacturers had employed and which they had found so essential.

Standardization of Government Cables

The Committee on the Standardization of Electrical Cables and Wires for Government Services (Secretary: Ministry of Supply, I.E.M.E., Walsingham, Chislehurst, Kent) has recently issued a 1949 reprint of GDES.5 and an Amendment List No. 1 to GDES.19-1947. The reprint of GDES.5 differs from the 1948 issue only in the numbering of the pairs of the cable. The Amendment List details additional types of cordage and amends the rubber and p.v.c. requirements.

Copies can be obtained from H.M. Stationery Office, price 6d, for GDES.5 and 1d for the Amendment List.

Trade Announcements

From 19th September next, the London office of **James Howden & Co., Ltd.,** and **James Howden & Co (Land), Ltd.,** will be at Caxton House, Westminster, S.W.1. (telephone: Whitehall 6901).

An exhibition of "Smithlite" fluorescent fittings and control gear is being held by **Herman Smith, Ltd.,** at Bonnington Hotel, Southampton Row, London, W.C.1, during the period 26th to 30th September inclusive.

The Electropower Co., Ltd., informs us that a new company has been formed with the title of **Electropower Gears, Ltd.,** to take over the gear side of its business. The address of the new company is the same as that for the Electropower Co., Ltd., at Kingsbury Works, Kingsbury Road, London, N.W.9.

Institute of Industrial Supervisors

A meeting of foremen and supervisors was held in Leeds on 8th September to consider the formation of a Leeds Section of the Institute of Industrial Supervisors, and a committee was elected to plan the immediate commencement of a Leeds section.

Catalogues and Lists

Wild-Barfield Electric Furnaces, Ltd., Elecfurn Works, Watford By-Pass, Watford, Herts.—Technical folder on toolroom tempering furnaces.

Muirhead & Co., Ltd., Elmers End, Beckenham, Kent.—Technical leaflet (B-638-A) describing a miniature standard cell.

Musgrave & Co., Ltd., St. Ann's Works, Belfast, Northern Ireland.—Illustrated catalogue of industrial fans, heating and ventilating equipment, dust collection and removal plant and industrial drying plant.

Sturtevant Engineering Co., Ltd., Southern House, Cannon Street, London, E.C.4.—Brochure on grain conveying and bin drying plant.

Nalder Bros. & Thompson, Ltd., Dalston Lane Works, London, E.8.—Priced catalogue of "Bijou" automatic circuit breakers for 0.25A to 20A circuits.

Siemens-Schuckert (Great Britain), Ltd., Great West Road, Brentford, Middx.—Catalogue of flameproof electric drills for coal and stone.

Salford Electrical Instruments, Ltd., Peel Works, Silk Street, Salford, Lancs.—Catalogue of selenium photocells and folder on quartz crystal units for radio on communication circuits.

Automatic Telephone & Electric Co., Ltd., Strowger Works, Liverpool, 7.—Catalogue of spare parts for mine telephones and signalling equipment.

British National Electrics, Ltd., Newarthill, Motherwell, Lanarkshire.—Priced leaflet describing two new portable fires for the coming season.

Benjamin Electric, Ltd., Brantwood Works, Tariff Road, London, N.17.—Folder on farm lighting fittings.

Heyes & Co., Ltd., Water Heyes Electrical Works, Wigan, Lancs.—Priced folder on "Wigan" prismatic and "Lacent" bulkhead lighting fittings.

Sharples Centrifuges, Ltd., Tower House, Woodchester, Stroud, Glos.—Technical brochure on oil purification.

Tube Company's Jubilee Gifts

To mark its fiftieth anniversary, the Tube Investments subsidiary, Accles and Pollock, Ltd., of Oldbury, Birmingham, last week made a gift to every employee with two or more years' service with the company. Over 3,500 employees will receive presentations, and of these nearly 700 have served for more than 25 years.

Information Department

THE extensive records of our Information Department enable us to reply to most queries, but occasionally we ask for our readers' assistance in tracing names and addresses not known to us. We should be glad to have such information regarding the makers of the following:—

"ASTRON" sun-ray lamp fittings.

General inquiries from readers relating to sources of electrical goods, makers' addresses, etc., are replied to by the Information Department through the post. Inquiries should be accompanied by a stamped addressed envelope.

FINANCIAL SECTION

Company News
Stock Exchange Activities

Reports and Dividends

Strand Electric Holdings, Ltd., reports that the gross trading profit of its subsidiary, Strand Electric & Engineering Co., Ltd., for the year ended 30th April last amounted to £196,160, as compared with £178,522 for the preceding year, which with rents receivable and profit on sale of investments makes £197,219. The net profit is £49,121 (against £48,267). Taxation requires £29,094, less £4,089 over-provision in previous years, and improvements to property £8,186. General reserve receives £6,000 and the profit for distribution to the Holding Co., is £11,630 (against £11,413), which is paying a dividend for the year of 17½ per cent, less tax (unchanged). The balance carried forward by the Holding Co. is £5,336 (against £4,831 brought in).

In his statement which accompanies the report and accounts, Mr. J. D. H. Sheridan (chairman and managing director of the Holding Co.), says that there was an increase of 14 per cent over the previous year in works production, and the current year has started with a full order book. Good progress has been made in all departments, and in the case of exports the 1948 target has been exceeded by a comfortable margin. The lifting of the lighting restrictions took place at the beginning of the last month of the financial year so that the effect of the increased volume of business of the Sign Department is not very apparent in the accounts. Progress in the new financial year has, however, been rapid. Beck and Pollitzer-Strand Electric, Ltd., in which Strand Electric holds one half of the share capital, has had annother successful year and the loans from the parent companies have been paid off.

Hopkinson Electric Co., Ltd.—The directors announce that after consultation with their parent company and their bankers, they have requested their bankers to appoint a receiver and manager pending negotiations for a reorganization which are in hand and which it is hoped will enable the new factory at Cardiff to be fully developed and used to capacity.

Venner Time Switches, Ltd., in a preliminary statement, show a loss for 1948 of £28,729, before tax, as compared with a profit for the preceding year of £19,452, before tax, and after crediting a surplus on physical stocktaking of £22,500. A sum of £16,000 is transferred from war contingency reserve, and £11,479 is carried forward. No ordinary dividend is paid (against 5 per cent, less tax).

Berry's Electric, Ltd., reports a trading profit for the year ended 31st March of £64,235, as compared with £66,262 for the preceding year. After providing for depreciation, directors' emoluments, staff pensions, etc., and adding £8,914 brought in, there is a balance available of £54,834. General reserve receives £11,500, and taxation requires £24,083. The ordinary dividend for the year is maintained at 12½ per cent less tax, and £9,557 is carried forward.

The Electric Furnace Co., Ltd., reports a profit for the year ended 31st March last, before tax, of £11,645. The dividend receivable from subsidiaries is £5,775. Reserve for income tax on current profits receives £6,340, and the final dividend on the ordinary and preferred ordinary is 4½ per cent, again making 8 per cent for the year. The balance carried forward is £22,407.

A. Reyrolle & Co., Ltd., have declared an interim dividend of 7½ per cent on the ordinary stock (against 5 per cent).

The British Oxygen Co., Ltd., is paying an unchanged interim ordinary dividend of 8 per cent, less tax.

Associated Electrical Industries, Ltd., has declared an interim ordinary dividend of 5 per cent (unchanged).

Oldham & Son, Ltd., propose to pay a final ordinary dividend of 30 per cent, again making 60 per cent for the year. The profits for the year to 31st May amounted to £244,971 (against £224,000) before taxation.

W. T. Henley's Telegraph Works Co., Ltd., is maintaining its interim ordinary dividend at 5 per cent, less tax.

Christy Brothers (Chelmsford), Ltd., report consolidated trading profits for the year ended 31st March last of £50,610, and a net profit of £17,758. The ordinary dividend is at the rate of 5 per cent per annum, and £3,100 is carried forward.

The East African Power & Lighting Co., Ltd., is paying a final dividend of 4 per cent, maintaining the distribution for the year at 7 per cent.

New Companies

Neon Service (Midland), Ltd.—Registered 2nd September. Capital £10,000. Maintainers, servicers, erectors and manufacturers of metal, electric and other signs, etc. Directors: F. J. Smith, H. J. Pearce, J. H. G. Pearce and P. Gill. Regd. office: 21, Royal East Street, Leicester.

Telefusion (Tyldesley), Ltd.—Registered 2nd September. Capital £500. Directors: J. C. Wilkinson and Constance M. Wilkinson. Regd. office: 11, Nicholas Street, Burnley.

Increases of Capital

Rentertainments (London), Ltd.—Increased by £45,000, in £1 redeemable cumulative preference shares, beyond the registered capital of £70,000. On 10th January, 1949, the Prudential Assurance Co., Ltd., held 50,000 preference shares and Radio Rentals, Ltd., 16,497 ordinary shares. On 8th August, 1949, the Prudential Assurance Co., Ltd., was allotted a further 45,000 5½ per cent redeemable cumulative preference shares.

Liquidations

The Roberne Electrical Supplies Co., Ltd.—Winding up voluntarily. Liquidator, Mr. S. R. Fenn, Sevenoaks, Kent.

Ba nkrupteies

J. V. Depledge, lately carrying on business at 108, Frodingham Road, Scunthorpe, Lincs, electrical contractor.—First meeting held 14th September. Public examination 6th October at the Town Hall, Great Grimsby.

E. D. S. Munday, residing and carrying on business at 272, Lake Road, Portsmouth, electrical engineer.—Order made 4th August granting discharge, but suspending it for two months until 4th October, 1949.

R. A. Squires, carrying on business as Radiotois at 21, Station Road, Brixton, London, S.W.9, radio engineer and dealer in electrical and radio goods.—Trustee, Mr. W. F. Cresswell, Bankruptcy Buildings, Carey Street, London, W.C.2, Senior Official Receiver, released 31st August.

H. J. Mason, formerly carrying on business at 1,097, Warwick Road, Acocks Green, Birmingham, under the style of Mason Radio and Electrical, as an electrical contractor and retailer.—Trustee, Mr. R. K. Clark, Somerset House, 37, Temple Street, Birmingham, 2. Official Receiver, released 31st August.

C. Davis and **R. Walster,** carrying on business in co-partnership as Davis and Walster at 198, Hessle Road, Hull, electrical engineers and contractors.—Trustee, Mr. H. S. Bloomer, 8, Flottergate, Great Grimsby. Official Receiver, released 31st August.

L. O. Richardson, The Bungalow, Norway Lane, Littlehampton, Sussex, electrical contractor.—Last day for receiving proofs for dividend 20th September. Trustee, Mr. A. E. Orbell, 6-7, Old Steine, Brighton.

N. A. Peters, carrying on business at 192, Robin Hood Lane, Hall Green, Birmingham, electrical and wireless engineer.—Last day for receiving proofs for dividend 24th September. Trustee, Mr. R. K. Clark, Somerset House, 37, Temple Street, Birmingham, 2, Official Receiver.

L. A. R. Batchelor, trading as Kenex Distributors at 139, Bohemia Road, St. Leonards-on-Sea, electrical and radio equipment wholesalers.—First and final dividend of 2s 10½d in the £, payable 30th September at the office of Mr. A. E. Orbell, 6-7, Old Steine, Brighton, 1.

Inadequate Libraries

A COMPLAINT about the management of scientific and technological libraries in this country was made by Dr. Percy Dunsheath in his presidential address to the Association of Special Libraries & Information Bureaux ("Aslib") last week. He placed the responsibility for the present state of affairs upon the Board of Trade and the Ministry of Education who controlled the Patent Office Library and the Service Library. As an industrial country we were more dependent than most on the free dissemination of scientific and technical knowledge but libraries were unable to make books available because of lack of space and under staffing.

Dr. Dunsheath complained that the Patent Office Library, the most useful in London and the best of its kind in the United Kingdom, was now closed at 6 p.m. instead of 10 p.m. as before the war, and the usefulness of the library was detracted from by delays in binding, the absence of books from open shelves, overcrowding and inadequacy of staff. Conditions were similar at the South Kensington library.

Arrangements in the United States contrasted strongly with those prevailing here. There was the closest co-operation between industry and the libraries. Dr. Dunsheath urged the establishment by the Government of a new Library of Science & Technology in Central London at least five times as large as the present Patent Office Library whose practical experience and tradition would be useful in setting up the new establishment.

FINANCIAL SECTION
STOCKS and SHARES

STOCK Exchange markets are pursuing a somewhat uneven course. The consol market, with its group of British Government securities, including British Electricity threes and British Transport threes, shows an unusual tendency to move abruptly one way or the other, according to the investment mood of the moment. The proceedings at the Three-Power Conference at Washington ran on smoother lines than had been expected. This had a strengthening effect upon prices. Mild activity developed in the gilt-edged list. Quotations were advanced last Monday morning, but the full extent of the rise was not held.

Earnings and Dividends

Below is a continuation of the list, given here on 17th June last, showing the extent to which this year's dividends on some of the popular electrical shares were covered by the earnings available for distribution on the ordinary capital. The figures are based on consolidated group accounts (where available) and last year's earnings are given for comparison:—

Company	Earned % 1947/8	Earned % 1948/9	Dividend %
C. A. Parsons ...	53.7	56.2	12½
G.E.C.	69.3	57.1	17½
Scottish Cables ...	47.1	72.6	30
Rheostatic	—	76.5	20
Telephone Manufacturing	18.0	36.1	9
Walsall Conduits ...	167.0	209.1	70
Hackbridge & Hewittic	20.6	26.9	12½
B.I.C.	22.6	37.7	6.2/3
B.E.T.	—	213.0	50
Revo	121.4	71.3	27½
Pye	81.7	71.1	25
Enfield Cable... ...	22.7	29.8	7½
Automatic Telephone	58.2	63.3	12½
London Elec. Wire ...	42.7	92.4	10

Dividends were the same as last year's, except for the half per cent. increase in Hackbridge and Hewittic's payment.

Reyrolle's Increased Interim

A. Reyrolle's £1 ordinary shares responded, with a rise to 62s 6d ex dividend, to the news of an increase in the interim payment from 5 to 7½ per cent. They were 56s 6d before the declaration, so that the net rise, including the value of the dividend, amounts to nearly 7s per share. Last year's final, declared in April, was 7½ per cent. The total of 12½ came out of earnings of over 34 per cent, on which basis the distribution could well be raised without overstepping the bounds of "moderation and restraint." The market concludes that a total of not less than 15 per cent for 1949 is, in the ordinary course of events, a safe assumption. This would put up the yield to £4 16s per cent.

Hackbridge Cable Holdings

This company's 5s ordinary shares were offered for sale at 15s 6d just a year ago, and the accounts as a public concern made their first, and satisfactory, appearance at the beginning of this month. Group trading profits of £311,200 left earnings of over 40 per cent for the £450,000 ordinary capital (which ranks after an equal amount in 5 per cent preference shares). The dividend is 20 per cent, as originally forecast, and gives the shares a yield of £6 17s per cent, at their present price of 14s 9d. On the preference, at 22s 9d, the return is £4 8s per cent.

H. J. Baldwin

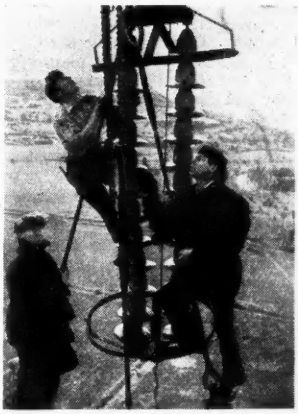
H. J. Baldwin & Co. have now made the new issue which was proposed last June, when the company suggested offering 50,000 6 per cent preference shares at 25s and 200,000 ordinary shares at 6s. These terms were subsequently reduced to 22s 6d for the preference and 5s 6d for the ordinary. The new ordinary are offered to shareholders in the proportion of one new share for five old shares; the preference shares receive the offer of one new preference share for each preference held. Both classes of shares, ordinary and preference, are now ex rights, and the price of the new shares is about 1½d premium in each case. The pre-existing old ordinary stand at 5s 9d, the old preference at 23s 3d.

Changes on the Week

Associated Electrical Industries have come to the fore with a rise of a florin at 73s 6d, and other industrials connected with the electrical industry are, generally speaking, a better market. B.I. Callender's Cables, 33s, Enfield Cables, 28s 9d, Henleys, 24s, Siemens 32s, are all higher on the week. The radio group is firm: Cossor in particular having been in request up to 7s 6d and E. K. Cole at 12s showing 1/8 rise. Of the higher priced shares, C. A. Parsons gained 3s 9d to 62s 6d, Tube Investments at 5⅛ are 2s 6d up; Babcock & Wilcox at 61s 9d are 3s 6d higher. Cable & Wireless ordinary at 235 and the preference at 108 are both a point to the good. On the other hand, Radio & Television at 1s 6d have lost 6d, Scottish Cables are easier at a guinea, General Cables are 1/16 down at 18s 9d and De la Rue at 25s have shed 9d. Oldham & Son 1s shares retain their improvement at 9s 6d; the accounts are very satisfactory.

Electricity Supply

New Power Station : Generation in August : "Prefab" Wiring



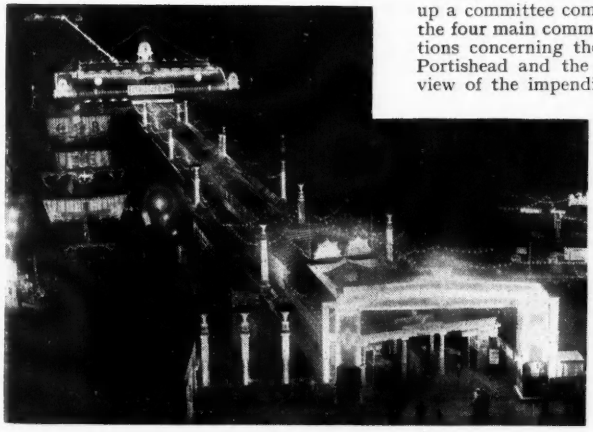
Workmen replacing the insulators on the 487ft. high pylons which carry the lines over the river from Barking power station. The work, which may last three weeks, will bar the passage of shipping on the Thames for two hours each day, while the cable is lowered to the river

APPLICATION has been made by the B.E.A. to the Minister of Fuel and Power for consent to the construction of a new generating station on a site of 88 acres partly in the parish of Bold (Whiston rural district) and partly in the borough of St. Helens, Lancs. It is to be designed for an ultimate capacity of 240,000 kW, the initial installation comprising two 30,000 kW turbo-alternator sets, two 300,000 lb/hr boiler units and a concrete cooling tower. Any objections must be notified within 30 days from 9th September.

Seaside Illuminations

Nightly for the next six weeks the sea-front at Southend-on-Sea from the Kursaal to the Shorefields Pavilion site is being illuminated by 12,000 striplights, the trees, shrubberies and gardens being floodlit by 800 tinted floodlanterns.

Many thousands of people crowded the promenade and Marine Gardens at Fleetwood for the switching on of the resort's first large-scale illuminations, the response greatly exceeding the anticipations of the organisers. Large crowds have also been to see the illuminations at Morecambe, which were officially switched on by Mr. Wilfred Pickles.



Illuminated pier at Southend-on-Sea

Objection to Price Increase

Hebburn-on-Tyne U.D.C. is objecting to the North-Eastern Electricity Board's decision to raise the charges for electricity supplied to the Council offices. The new rates will be ¾d per kWh for lighting and water heating and will bring the offices into line with other consumers who have been paying the higher rate for some months.

Future of Portishead

Portishead Council on 7th September set up a committee comprising the chairmen of the four main committees to deal with questions concerning the development plan for Portishead and the surrounding district in view of the impending erection of the new generating station. The clerk said that with the surveyor he had seen the Somerset county authority representatives at Taunton and they had urged that the solution to the problem was that Portishead should be designated as a new town, developed by a development corporation, and handed back to the local authority for administration on

completion of the development. The County Council had acted quickly and representatives of its planning department had begun the preparation of the new plan for the district. Portishead Council would have to define soon where it proposed to build the 350 additional houses which it was stated would be required for employees who would work at the new generating station.

S.W. Board and Public

The South Western Electricity Board is launching a series of announcements in the Press telling the public about the electricity situation in its area, explaining not only the problems and difficulties, but the Board's plans for the future. At present 55 per cent of the area is without a supply, and it is necessary to construct 420 route miles of 33kV overhead lines and to equip 48 switching and transformer stations. While this work is going ahead new consumers are being connected at the rate of 100 every working day. The area served by the Board is largely agricultural and, therefore, particular attention is being paid to the needs of the farming community. A series of posters based on the advertisements has been prepared for display in service centres and on suitable outdoor sites.

"Prefab" Wiring Tests

Because of complaints by people living in prefabricated bungalows that they have received severe electric shocks owing to wiring faults, Manchester Housing Committee recommended on 12th September that an investigation should be made into the 3,004 "prefab" dwellings, which are owned by the Ministry of Works. The Committee also decided to ask for a report on deterioration of the bungalows, repairs to which, it was estimated, will cost £10 a house, or about £30,000. An examination already made of 133 bungalows, it was stated, had shown that 37 fires which had broken out originated from switchgear and control panels. Repairs to 12 defective refrigerators had cost more than £60, and there were also leaking roofs. Councillor H. Bentley, chairman of the Committee, said that when Corporation officials protested against the proposed layout of the electrical installation, they were told that it must be accepted.

Following "unsatisfactory" test results on a number of premises the South-Western Electricity Board is to test the electrical wiring of all prefabricated houses at Teignmouth, Devon. This was stated by the chairman of the Council (Mr. Alan Etherton) at a recent Press conference. It is recommended by the Housing and Town Planning Committee that the results of the check should be forwarded to the Ministry of Health.

Refrigerators for Council Houses

Bristol Housing Committee on 5th September agreed in principle to a report that refrigerators should be made available to tenants of council houses. It was decided to refer the matter to a sub-committee to work out the details. The intention is that there should be no charge on the Council. Mr. K. A. L. Brown thought it was unfair that refrigerators should be available only to Council tenants.

Generation in August

During August 3,449 million kWh was generated at power stations controlled by the British Electricity Authority, the North of Scotland Hydro-Electric Board and the Lochaber Power Co. This was 4.5 per cent more than in the corresponding month of last year. From the accompanying table it will be seen that water-power generation was considerably reduced (56.5 per cent less than in August last year). Installed capacity at 13,428 MW was 13 MW lower than in July.

	Fuel consumed Thousand tons		kWh generated Millions			kWh sent out Millions	Installed capacity (m.c.r.) MW
	Coal	Oil	Steam	Water Power	Total*		
British Electricity Authority ...	2,007	2.4	3,343	12	3,366	3,162	13,104
North of Scotland	18	0.8	29	50	83	81	324
Total for August, 1949	2,025	3.2	3,372	62	3,449	3,243	13,428
Corresponding total for August, 1948	1,975	2.3	3,184	97	3,294	3,103	12,983
Increase or decrease as a percentage of 1948	+2.5	+28.1	+5.6	−56.5	+4.5	+4.3	+3.3
Total for Jan.-August	18,516	31.2	30,494	767	31,388	29,592	
Total for corresponding period of 1948	18,023	24.5	28,953	826	29,881	28,188	
Increase or decrease as a percentage of 1948	+2.7	+21.5	+5.1	−7.7	+4.8	+4.7	

*The total figure includes generation by oil engines, refuse destructors and waste heat plants amounting to 5.6 million, 0.1 million and 8.5 million kWh respectively in August.

NEW PATENTS

Electrical Specifications Recently Published

The numbers under which the specifications will be printed and abridged are given in parentheses. Copies of any specification (2s each) may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2.

1944

16609. British Thomson-Houston Co., Ltd.—Electric arc furnace control systems. 31st August, 1943. (628104.)

16747. Sperry Gyroscope Co., Inc.—Receiving apparatus for equi-signal radio-navigation systems. 1st September, 1943. (628244.)

23623. British Thomson-Houston Co., Ltd.—Field control systems for synchronous electric motors. 27th November, 1943. (628384.)

24604. Standard Telephones & Cables, Ltd. (International Standard Electric Corporation).—Telecommunication systems. 8th December, 1944. Convention date not granted.) (628174.)

1945

7204. Submarine Signal Co.—Submarine signalling apparatus. 7th December, 1942. (628105.)

11827. British Thomson-Houston Co., Ltd.—Electric motor control systems. 12th May, 1944. (628386.)

13560. Philco Radio & Television Corporation.—Electric frequency coincidence indicators. 30th May, 1944. (628245.)

15845. Babcock & Wilcox Co.—Fluid heating. 4th July, 1944. (628321.)

15946. Philco Corporation.—Recording apparatus. 8th May, 1944. (628246.)

28120. Philco Radio & Television Corporation.—Deflection signal generator for polar scanning of cathode-ray tubes. 25th April, 1944. (628249.)

1946

5931. Marconi's Wireless Telegraph Co., Ltd.—Apparatus for controlling the frequency of an oscillator. 29th July, 1944. (628253.)

6124. General Electric Co., Ltd., and Branson, W. G. S.—Seals for electric-discharge devices. 27th February, 1946. (628254.)

12054. Creed & Co., Ltd.—Auxiliary service equipment for telegraph receivers. 21st April, 1945. (628389.)

12598. Tench, F. (Automatic Electric Laboratories, Inc.).—Radio telephone communication systems. 26th April, 1946. (628390.)

18000. Standard Telephones & Cables, Ltd.—Blocking layer type detectors. 13th October, 1943. (628393.)

20442/5. Standard Telephones & Cables, Ltd. (International Standard Electric Corporation).—Telecommunication switching systems. 5th February, 1944, and 5th December, 1944. (Convention date not granted.) Divided out of 628174.) (628176/9.)

20803. Marconi's Wireless Telegraph Co., Ltd.—Thermionic valve circuit arrangement for alternately switching on and off alternating signals to a load. 14th December, 1944. (628257.)

21430. British Thomson-Houston Co., Ltd., and Harvey, A. F.—Electric motor control systems. 17th July, 1946. (628326.)

22873. Sadir-Carpentier.—Method for the duration modulation of electric pulses. 31st July, 1945. (Cognate applications 22874/46 and 22875/46.) (628260.)

24029. Abisch, O.—Drums for cables and the like. 9th August, 1946. (628395.)

24977. Roumefort, F. de.—Recording apparatus for electrical measurement. 15th May, 1943. (628124.)

24985. O'Brien, W. J.—Thermionic valve frequency divided circuits. 27th August, 1945. (628125.)

25490. O'Brien, W. J.—Vacuum tube generators. 7th August, 1945. (628126.)

25492. O'Brien, W. J.—Radio beacon systems of the equi-phase displacement type. 27th August, 1945. (628396.)

27888. Weisselberg, A.—Electrical gauging devices. 18th October. 1945. (Cognate application 27889/46.) (628400.)

28921. Philips Lamps, Ltd.—Anodic polishing of graphite and current-converting tubes of the kind comprising a graphite anode. 15th March. 1943. (628129.)

33165. Marconi's Wireless Telegraph Co., Ltd., and Rooyen, L. J. Van.—Variable tone control and other variable shaping circuit arrangements for thermionic valve circuits. 7th November, 1946. (628136.)

34588. Automatic Electric Laboratories, Inc.—Switches for use in telephone or like systems. 21st November, 1945. (628402.)

35466. Standard Telephones & Cables, Ltd., and Moore, T.—Timing devices using thermionic valves. 29th November, 1946. (628271.)

36931. Westinghouse Brake & Signal Co., Ltd., and Sheppard, E. A.—Manufacture of photo-electric cells of the selenium type. 14th December, 1946. (628273.)

37536. British Thomson-Houston Co., Ltd.—Capacitors. 22nd December, 1945. (628275.)

38135. Philips Lamps, Ltd.—Electric fittings comprising a lampholder combined with a suspension tube. 8th October, 1943. (628277.)

1947

4080. Electronics Research, Inc.—Antennae. 20th February, 1946. (628283.)

5480. General Electric Co., Ltd., and Bryden, J. E.—Amplitude monitors. 25th February, 1947. (628406.)

6241. Western Electric Co., Inc.—Point contact negative resistance devices. 2nd March, 1945. (628287.)

6483. Patelhold Patentverwertungs- & Elektro-Holding Akt. Ges.—Modulated pulse multiplex transmission systems. 8th March, 1946. (628408.)

6616. Horstmann, F. G. Q.—Inspection lamps. 10th March, 1947. (628192.)

6762. General Electric Co., Ltd., and Bryden, J. E.—Thermionic valve relaxation circuits. 11th March, 1947. (628409.)

7071. E.M.P. Electric, Ltd., and Humphreys, J. E.—Lightning arrestors. 13th March, 1947. (628155.)

7614. G.M. Engineering (Acton), Ltd., Fletcher, F. L., Stowe, G., and Smith, P. A.—Electric water heaters. 19th March, 1947. (628193.)

8637. Debenham, W. R., and Mitchell, A. H.—High-frequency ignition systems for internal-combustion engines. 31st March, 1947. (628157.)

12376. Philips Lamps, Ltd.—Dials along which a pointer is movable. 10th May, 1946. (628163.)

13266. General Electric Co., Ltd., Cropper, W. C., and Wells, G. M.—Cleansing apparatus. 16th May, 1947. (628415.)

14085. Molins Machine Co., Ltd., Harvey, V. P., and Powell, G. F. W.—Dynamic braking for electrically driven machines. 27th May, 1947. (628299.)

14871. Superheater Co., Ltd.—Steam superheater element and method of manufacturing the same. 11th June, 1946. (628339.)

15216. Plessey Co., Ltd.—Thermal-responsive electric control devices. 15th June, 1946. (628304.)

15297. Coates, J. B., and Hankins, M. A.—Electrical plug-and-socket connectors. 31st December, 1946. (628419.)

16740. Philips Electrical, Ltd., and Rothschild, S.—Luminescent materials. 25th June, 1947. (628308.)

18274. General Electric Co., Ltd., and Bell, A. E.—Broadcast radio receivers incorporating frame aerial systems. 10th July, 1947. (628344.)

19261. Western Electric Co., Inc.—Control circuits for signal transmission systems. 4th October, 1939. (628348.)

19270. Warnstrom, M. E.—Apparatus for washing dishes or the like. 25th July, 1946. (628168.)

25428. Johnson, Matthey & Co., Ltd., and Walter, D. O.—Electric condensers. 29th July, 1947. (628352.)

21697. Sylvania Electric Products, Inc.—Electrical contact socket. 26th April, 1940. (628359.)

21769. Western Electric Co., Inc.—Party-line telephone systems. 11th July, 1940. (628200.)

24536. Patelhold Patentverwertungs- & Elektro-Holding Akt.-Ges.—Method and arrangement for converting time-modulated electric pulses into amplitude-modulated pulses. 6th September, 1946. (628367.)

24938. Lucas, Ltd., J., and Gilbert, B.—Contact-breakers for electric spark ignition apparatus for internal-combustion engines. 11th September, 1947. (628206.)

25064. Standard Telephones & Cables, Ltd., and Kramskoy, C. M.—Electric time modulation systems of communication. 12th September, 1947. (628425.)

25148. Van der Heem N. V.—Switching device for electrical apparatus, such as is used for heating pillows, blankets and the like. 23rd September, 1946. (628427.)

25327. Ericsson Telephones, Ltd., and Distin, L. S.—Means for deriving an alternating electric current from a direct-current supply. 17th September, 1947. (628208.)

25356. Hill, R. F.—Wireless receiving systems for carrier shift telegraphy. 17th September, 1947. (628210.)

25827. Electrical Apparatus Co., Ltd., and Walton, J. R.—Apparatus for protecting electrical apparatus against overload and/or unbalance. 23rd September, 1947. (628220.)

25852. Yarrow, Sir H. E.—Water tube steam boilers and superheaters. 23rd September, 1947. (Addition to 577297.) (628221.)

25856. Westinghouse Electric International Co.—Stems for electrical devices. 24th September, 1946. (628222.)

26000. Ferranti, Ltd., and Simson, V. J.—Electrical condensers. 25th September, 1947. (628233.)

26019. C.A.V., Ltd., and Thorpe, E. H. C.—Delayed-action electric switches. 25th September, 1947. (628236.)

26144. Westinghouse Electric International Co.—Selenium rectifiers. 30th October, 1946. (628240.)

26147. Westinghouse Electric International Co.—Combustion apparatus. 3rd October, 1946. (628241.)

26179. Hewitt, N. E.—Electrical power plug. 26th September, 1947. (628369.)

26180. British Mechanical Productions, Ltd., and Osborn, F. T.—Electrical pin-plugs. 26th September, 1947. (628429.)

26250. Muirhead & Co., Ltd., and Tucker, E. W.—Standard electric cells. 29th September, 1947. (628372.)

26273. Magnetos Lucifer Soc. Anon.—Magneto-electric generators. 28th October, 1946. (628373.)

26299. Ceag, Ltd., and Plummer, R. J.—Apparatus for charging the batteries of miners' electric safety lamps. 29th September, 1947. (628375.)

26361. Bright, F. J., and Lees, D. M.—Manufacture of electric motor stators and like magnetic parts. 30th September, 1947. (628377.)

26386. Parsonage, S. H.—Electrical contact mechanism for operation at elevated temperatures. 30th September, 1947. (628379.)

26415. Petter, K. M.—Time delay electric switches. 30th September, 1947. (628431.)

26416. Chave, D. M.—Permanent magnets. 30th September, 1947. (628432.)

26921. Standard Telephones & Cables, Ltd., and Childs, P. A.—Lubrication of surfaces subject to relative movement in contact in electromagnetic relays. 7th October, 1947. (628443.)

28594. Rockman, P.—Electric soldering irons. 27th October, 1947. (628452.)

28866. English Electric Co., Ltd., and Hughes, J. O. P.—Gearing. 29th October, 1947. (Cognate application 11852/48.) (628453.)

1948

20055. Standard Telephones & Cables, Ltd. (International Standard Electric Corporation).—Telecommunication systems. 8th December, 1944. (Divided out of 628174.) (628242.)

20348. Philco Radio & Television Corporation.—Frequency measurement. 30th May, 1944. (Divided out of 628245.) (628312.)

Trade Marks

APPLICATIONS have been made for the registration of the following trade marks. Objections may be entered within a month of the dates given.

31st August

HUNTS. No. 662,854. Class 9. Electric capacitors (condensers).—A. H. Hunt, Ltd., Bendon Valley, Garrett Lane, London, S.W.18.

GAC CLIX (design). No. 673,700. Class 9. Electric switches, contacts, terminals, cut-outs and plug-and-socket connections. Also No. 673,701. Class 11. Electric lamp fittings and ceiling roses.—British Mechanical Productions, Ltd., 21, Bruton Street, London, W.1.

EMOTROL. No. 676,414. Class 9. Apparatus in Class 9 for the control of electric motors.—British Thomson-Houston Co., Ltd., Crown House, Aldwych, London, W.C.2.

JEN-HELECS. No. 672,371. Class 12. Complete electrically propelled road vehicles.—Hindle, Smart & Co., Ltd., 20, Wilmslow Road, Withington, Manchester, 20.

7th September

SWIFSURE (design).—No. 651,719. Class 7. Electrically operated woodworking machines for sawing, dovetailing and sanding.—David Landale, trading as Landale & Son, 36, Great King Street, Edinburgh, 3.

POWQUIP.—No. 677,362. Class 7. Electric motors (not for land vehicles), electric starters for motors (not for land vehicles), and parts included in Class 7. POWQUIP.—No. 677,363. Class 9, and QUIP, No. 677,364. Class 9. Electrical apparatus and instruments and parts all included in Class 9.—The Power Equipment Co., Ltd., Kingsbury Works, The Hyde, Hendon, London, N.W.9.

HORNET.—No. 677,436. Class 9. Electric burglar alarm systems, alarm bells, switches, transformers, distribution boards and distribution boxes.—J. Westaway, 18, Harrow Road, Brooklands, Sale, Ches.

OSILO.—No. B659,894. Class 9. Burglar alarm systems.—Electric Time Rentals, Ltd., Winchester House, Old Broad Street, E.C.2.

STELLEX.—No. 656,871. Class 11. Electrically operated appliances included in Class 11 for cooking and heating purposes.—C. H. Blackburn & Co., Ltd., 10, Gray's Inn Road, London, W.C.1.

PRESTOMETIC.—No. 677,068, and PRESTOMATIC. No. 677,069. Class 11. Refrigerating machines and parts thereof included in Class 11.—Presses Steel Co., Ltd., Cowley, Oxford.

ISOMAT.—No. 677,356, and ISOPANEL, No. 677,357. Class 11. Electrical installations and apparatus for heating purposes, and parts thereof included in Class 11.—Isopad, Ltd., 13-17, Rosemont Road, London, N.W.3.

ELBCOL.—No. 677,864. Class 11. Electric cooking stoves, boiling plates, etc..—Electric Boiling Plates, Ltd., 25-31, Shard Road, Pecksham, London, S.E.15.

USALITE (design).—No. B679,023. Class 11. Electric torches and parts thereof included in Class 11.—United States Electric Manufacturing Corporation, New York. Address for service, c/o Haseltine, Lake & Co., 28, Southampton Buildings, Chancery Lane, London, W.C.2.

CONTRACT INFORMATION

ACCEPTED TENDERS AND PROSPECTIVE ELECTRICAL WORK

Contracts Open

Where "Contracts Open" are advertised in our "Official Notices" section the date of the issue is given in parentheses.

Australia. — MELBOURNE. — 9th November. State Electricity Commission of Victoria. Steel framed workshop and stores buildings. (2nd September.)

MELBOURNE.—21st September. State Electricity Commission of Victoria. Supply of mobile cranes and diesel tractors. (9th September.)

Belfast.—30th September. Electricity Department. V.h.f. fixed and mobile radio telephone equipments. (9th September.)

Belgium. — BRUSSELS. — 28th September. Belgian State Railways. Telephone switchboards. (C.R.E. (I.B.) 24771/49. Ten/647.)*

Birmingham.—14th October. Estates Department. Electrical wiring of huts at Church Road Camp, Yardley. (See this issue.)

India.—MADRAS.—24th October. Government Electricity Department. Switchgear and transformers for 132 kV sub-stations. (CRE (IB) 23552/49. Ten/637.)*

Coventry.—5th October. Housing Committee. Electrical installations in 126 houses. (See this issue.)

Egypt.—CAIRO.—25th October. Electricity and Gas Administration. Electric cable. (See this issue.)

Hornsey.—1st October. Town Council. Supply of columns, brackets and fittings in Archway Road and Aylmer Road. (See this issue.)

Lancashire.—County Council. Electrical installation at Penwortham Secondary School. (See this issue.)

London.—WANDSWORTH.—16th November. Borough Council. Electrical installation and other work at the Council's Depot, Greaves Place, S.W.17. (See this issue.)

Luton.—26th September. Corporation. Electrical installation at 63-69, Guildford Street, (9th September.)

New Zealand.—WELLINGTON.—31st January. State Hydro-Electric Department. Four 3,333 kVA transformers. (C.R.E. (I.B.) 23791/49. Ten/618.)*

Slough.—21st September. Corporation. Trunk road lighting scheme. (9th September.)

South Africa.—CAPE TOWN.—12th October. City Electricity Department. Supply of 1,000 single-phase a.c. meters. (C.R.E. (I.B.) 24914/49. Ten/646.)*

Swaffham and Wayland.—1st October. Rural District Councils. Four sets of electrically operated automatically controlled vertical spindle centrifugal pumping plant, for Saham, Toney and Watton sewerage. A. P. I. Cotterell & Son, engineers, 54, Victoria Street, Westminster, S.W.1.

* Specifications may be inspected at the Commercial Relations and Exports Department, Thames House North, Millbank, S.W.1.

Orders Placed

Hemel Hempstead.—Hemel Hempstead Development Corporation. Electrical installations in 100 houses.—Alpha Manufacturing & Electrical Co.

London.—L.C.C. Electrical installations in 336 dwellings at Downham estate. Lewisham.—London Electricity Board (Southern Sub-Area). Electrical installation at Culloden Street School.—W. H. Gaze & Sons.

Sheffield.—Corporation. Electrical installations in 190 houses on the Richmond Park estate (£4,238).—A. Holmes.

Sunderland.—Hospital Management Committee.—Electric wiring of Boldon Isolation Hospital.—Hartley's Electromotives, Ltd.

Contracts in Prospect

Particulars of new works and building schemes for the use of electrical installation contractors and traders. Publication in this section is no guarantee that electrical work is definitely included. Alleged inaccuracies should be reported to the Editors.

Accrington.—Houses (120), Drill Hall Lane, Church; John Laing & Son, Ltd., builders, Dalston Road. Carlisle.

Ashton-under-Lyne.—Houses (53), Crowhill; borough engineer.

Barnard Castle.—Houses (48) for the North-Eastern Housing Association; Piggott Bros. & Co., Ltd., builders, Darlington.

Bath.—New buildings for Royal National Hospital for Rheumatic Diseases, Milk Street; South West Regional Hospital Board, 6, Elton Road, Bristol, 8.

Birkenhead.—Assembly hall, St. Anselm's College, Manor Hill; E. Kirby & Sons, architects, 5, Cook Street, Liverpool.

Birmingham.—Maternity home, Perry Barr; Regional Hospital Board, 10, Augustus Road, 15.

Blyth.—Clothing factory. Cowpen Road; Town Tailors, Ltd., Market Hall, Whitby.

Brigg.—Additions and alterations to Corn Exchange; A. R. Haynes, surveyor, 18, Digby Street.

Chester-le-Street.—Paint factory at Birtley for Chemika, Ltd., Birtley.

Darlington.—Houses (29), Middleton St. George, for R.D.C.; J. F. Sweeten, architect. 43, Geneva Road.

Ealing.—Rebuilding and development of King Edward Memorial Hospital; North West Metropolitan Regional Hospital Board, 11a, Portland Place, London, W.1.

Fylde.—Houses (32), Freckleton, for R.D.C.; surveyor, Station Road, Kirkham, Lancs.

Gateshead.—Technical college and college for adult education (£140,000); borough architect, Town Hall.

Glasgow.—Garage and transformer house, Alexandra Parade; Imperial Tobacco Co., Ltd., Bristol, 3.

Extensions to works; Andrew Muirhead & Son. 275, Dunn Street.

Hartlepool.—Houses (14), Sutton Trust Estate. Builders: Watt Bros., Park Road, West Hartlepool (six houses); Rennie & Son, Regent Square, West Hartlepool (eight houses).

Herne Bay.—Workshops for Cripplecraft, Ltd., Strode Park; G. Marsh, architect, Westminster Bank Chambers.

Hetton (Co. Durham).—Houses (79), Low Downs, Byers Street; U.D.C., surveyor.

Holywell.—Dining-room and kitchen at Holywell Grammar School for Flintshire C.C.; T. J. Williams, builder, Caerwys, Flint.

Horbury.—Houses (104), Manor Fields site, for U.D.C.; surveyor.

Horncastle.—Houses (102), Bareham-Boston Road, for U.D.C.; surveyor.

Hounslow.—Bottling stores. Great West Road; M. B. Foster & Co., Ltd., 242, Marylebone Road, N.W.1.

Huddersfield.—Secondary modern county school, Rawthorpe; G. Crossley, education architect, Peel Street.

Hythe (Kent).—Houses (48), Horn Street; M. J. H. Girling, town clerk, 1, Stade Street.

Ilford.—Out-patients' accommodation, King George Hospital; North-East Metropolitan Hospital Board, 3, Queen Anne Street, W.1.

Office block, Cranbrook Road; Peter Caspari, architect, 20, Dorset Square, N.W.1.

Jarrow.—Bilton Hall primary school; Turner & Ing, quantity surveyors, 2, Garden Street, Darlington.

Kielder (Northumberland).—Houses (20), for the Forestry Commission; W. A. McLeod and Co., Ltd., builders, Russell Road, Edinburgh.

Leigh.—Extensions and alterations to technical college (£62,000); George Moss & Sons, Ltd.

Liverpool.—Flats, Westbourne Street (78) and Chaucer Street (72); city architect and director of housing.

Llanfair Caereinion.—School for Montgomeryshire E.C.; county architect, County Offices, Welshpool.

London.—CANNING TOWN.—Houses (62), Wightman Street; West Ham borough architect, 70, West Ham Lane, E.15.

HENDON.—Flats (76), Edgworth Crescent; borough engineer.

WANDSWORTH.—Eight blocks of flats (60 dwellings), Strathville Road, Southfields, and Hopton Road, Streatham; R. H. Jerman, town clerk, Municipal Buildings, S.W.18.

Maidstone.—Omnibus station, offices etc., Palace Avenue and Lower Stone Street; Maidstone & District Motor Services, Ltd., Lower Stone Street.

Extensions to printing works; Alabaster. Passmore & Sons, Ltd., Straw Mill Hill, Tovil.

Melksham.—Adaptations at Shaw House, for aged persons' home; F. I. Bowden, county architect, County Hall, Trowbridge.

Middlesbrough.—Houses (92), at Beechwood for the T.C.; borough engineer.

Mitcham.—Flats (198), Elm Nursery estate; borough surveyor.

Morecambe.—Houses (14), Warton Avenue; Thomas Holroyd, Ennerdale, Trunacar Lane, Heysham.

Nelson.—Houses (50), Hodge House estate; Geo. Wimpey & Co., Ltd., Hammersmith Grove, W.6.

Newcastle-on-Tyne.—Houses (34), Longbenton housing estate, for City Council; W. H. Oliver, Ltd., builders, 46, West Road, Newcastle-on-Tyne.

Factory additions. Blandford Street, for E. White; M. Gatoff, architect, 25, Trafalgar Street.

Factory addition, Sandgate, for Essen, Ltd.; J. W. Taylor & Son, architects, St. James' Buildings, Gallowgate, Newcastle.

Houses (32) at the Riding and the Rise; Kenton Lane Estate Co., Ltd., builders, Bolbec Hall.

Nottingham.—Extensions to works, Beeston; Boots Pure Drug Co., Ltd., Station Street.

Poole-in-Wharfedale.—Factory for B. S. & W. Whiteley, Ltd., Poole Paper Mills; plans by F. Atkinson, Barclays Bank Chambers, Bingley.

Portland.—Houses (78), Verne Common site, for U.D.C.; Crickmay & Son, architects, 23, St. Thomas Street, Weymouth.

Pyestock.—Office block, National Gas Turbine Establishment; Lavender McMillan, Ltd., builders, 54, Cheam Common Road, Worcester Park, Surrey.

Radcliffe.—Extension of Wellington Mills, Milltown Street.; J. Bentley & Sons.

Richmond (Yorks).—Houses (20), Mowbray Road estate, Catterick, for R.D.C.; F. Shepherd & Sons, York. Houses (20), Gilling; Boddy & Bell, Darlington.

St. Helens.—Houses (64), Derbyshire Mill site; M. Ward, borough engineer, Town Hall.

Salford.—R.C. junior and infants' school, Higher Broughton; H. Greenhalgh, architect, Court Chambers, 15, Mawdsley Street, Bolton.

Sedgley.—Houses (42), Ettymore (North) site, for U.D.C.; Lavender, Twentyman & Percy, architects, 2, Waterloo Road, Wolverhampton.

Shrewsbury.—Houses (234); borough surveyor, Guildhall.

Sleaford.—Reinstatement of wards, etc., at Rauceby Hospital, for Sheffield Regional Hospital Board; Vallance & Westwick, architects, White Hart Chambers, Mansfield.

Smethwick.—Rebuilding of bakeries, Corbett Street; Scribbans-Kemp, Ltd., Africa House. Kingsway, W.C.2.

Southampton.—Houses (194), Millbrook and Harefield site; F. Bilton, Ltd., builders, 83, Wincolmlee, Hull.

Stalybridge.—Houses (70), Buckton Vale; Howard & Benson, architects, 88, Mosley Street, Manchester.

Sunderland.—Motor works additions, Paley Street, for R. G. White & Sons; H. Waller, builder, Back Waller Street, Newcastle-on-Tyne.

Surrey.—Primary schools, Merland Rise, Banstead (£61,100), and Park Farm, Beddington (£46,500); J. Harrison, county architect, County Hall, Kingston-on-Thames.

Swadlincote.—Houses (57), Midway estate; U.D.C. surveyor.

Tamworth.—Dwellings (60), at Fazeley Road site; H. Purshouse & Sons, Rookery Street, Wednesfield.

Torquay.—Houses (157), Marldon site; borough engineer.

Washington (Co. Durham).—Rebuilding Council Offices (£42,000); E. M. Lawson, architect, Barras Buildings, Barras Bridge, Newcastle-on-Tyne.

Wednesfield.—Houses (45), Colman Avenue; A. H. Lawrence, U.D.C. surveyor, 29, Bolton Road.